Vitals Reference Manual

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Table of Contents

Chapter 1: About This Manual 1
Purpose of This Manual 1
How to Use The Manual 1
Manual Updates and Revision Tracking 2

Chapter 2: Safety 3
Operator Safety 3
Safety Symbols 4
Protective Equipment Requirements 5
Vitals Diagnostics 5

Chapter 3: Vitals Hardware and Software 7
Vitals System Architecture 7
System Requirements 9
Valve Operator Feature Support and Compatibility 9
HC-100 Handheld Controller with Vitals Mobile 10
Connection Options 10
External GPS 12

Chapter 4: Starting Up with Vitals 3.3 21
What's Included 21
Installing Vitals Desktop 22
Installing Vitals Mobile 25
Foreign Language Support 29

Chapter 5: HC-100 Handheld Controller 31
Starting Vitals Mobile 31
Main Screen Reference 33
Changing Settings 35
Vitals Mobile Controller Operation 41
Vitals Controller 41
Valve Operation with Data Logging 44
Starting a New Valve Activity 44
Accessing Saved Activities 47
Enabling and Using GPS 50
GPS Status Bar Statements and Enabling GPS Receivers 50

Logging GPS Positions 50
Vitals Mobile Diagnostics 50
Brake Test 52
Counter Test 53
GPS Test 55
Hydraulics Test 56
Diagnostics Logs 57

Chapter 6: Using Vitals Desktop 3.3 59
Initial Start-Up 59
Screen Reference 60
Main Screen 60
Creating and Editing Valves and Activities 62
Valve Record 62
Activity Record 63
Remarks List Window 64
Analyzing Valve Data 65
Displaying Valve/Activity Records 65
Printing 68
Print Detail 68
Activity Report 69
Transferring Data Between Vitals Desktop and Vitals Mobile 70
Data Transfer 70
Uploading Large Databases 73
Database Options 75
Database Setup 75
Customize Data Fields 76
Queries 77
Help Options 78

Chapter 7: Troubleshooting Guide 81

Chapter 8: Ordering Information 93
Ordering Replacement Parts 93
Repair Information 93
Warranty Information 94
Return Goods Address 94

Chapter 9: Vitals Valve Exercising Program 95
Function Overview 95
Jogging 96
Manual Mode 96

Chapter 1
About This Manual

PURPOSE OF THIS MANUAL

This manual explains the functions of the Vitals system for valve operation and maintenance. Vitals version 3.3 includes the following components:

- HC-100 handheld controller for valve operation and data collection with the ERV-750, TM-7, and TM-6 valve operators.
- Vitals Mobile 3.3 software, running on the HC-100 controller.
- Vitals Desktop 3.3 software for Window-based computers, for valve database management.

Chapter 2 describes the Vitals 3.3 hardware and software in detail.

When using Vitals version 3.3 for the first time, be sure to follow the procedures in Chapter 3, “Starting Up with Vitals 3.3”. The setup procedure requires that you have a Windows (version 7, 8, or Vista) PC on which you can install Vitals Desktop 3.3.

HOW TO USE THE MANUAL

This manual is organized to help you quickly find the information you need. Each chapter describes a specific topic on using the Vitals controller and software.

In This Chapter

PURPOSE OF THIS MANUAL

HOW TO USE THE MANUAL

MANUAL UPDATES AND REVISION TRACKING

Throughout this manual, refer to this column for cautions and notices with supplementary information.

This symbol indicates a user notice. **Notices** provide additional information to supplement the instructions, or tips for easier operation.

Each page is designed with two columns. This large column on the inside of the page contains instructions and illustrations. The narrower column on the outside contains additional information such as special notes and definitions. Refer to it for safety notes and other information.

MANUAL UPDATES AND REVISION TRACKING

Occasionally, we will update manuals with improved operation or maintenance procedures, or with corrections if necessary. When a manual is revised, we will update the revision history on the title page.

Current versions of E.H. Wachs Company manuals are also available in PDF format. You can request an electronic copy of this manual by emailing customer service at sales@ehwachs.com.

You may have factory service or upgrades performed on the equipment. If this service changes any technical data or operation and maintenance procedures, we will include a revised manual when we return the equipment to you.

Chapter 2
Safety

E.H. Wachs takes great pride in designing and manufacturing safe, high-quality products. We make user safety a top priority in the design of all our products.

Read this chapter carefully before operating the valve equipment using the Vitals HC-100 controller. It contains important safety instructions and recommendations.

In This Chapter

OPERATOR SAFETY

VITALS DIAGNOSTICS

OPERATOR SAFETY

Follow these guidelines for safe operation of the equipment.

- **READ THE OPERATING MANUAL.** Make sure you understand all setup and operating instructions before you begin.
- **INSPECT MACHINE AND ACCESSORIES.** Before starting the machine, look for loose bolts or nuts, leaking lubricant, rusted components, and any other physical conditions that may affect operation. Properly maintaining the machine can greatly decrease the chances for injury.
- **ALWAYS READ PLACARDS AND LABELS.** Make sure all placards, labels, and stickers are clearly legible and in good condition. You can purchase replacement labels from E.H. Wachs Company.
- **KEEP CLEAR OF MOVING PARTS.** Keep hands, arms, and fingers clear of all rotating or moving parts.

Look for this symbol throughout the manual. It indicates a personal injury hazard.

Always turn machine off before doing any adjustments or service.

- **SECURE LOOSE CLOTHING AND JEWELRY.** Secure or remove loose-fitting clothing and jewelry, and securely bind long hair, to prevent them from getting caught in moving parts of the machine.
- **KEEP WORK AREA CLEAR.** Keep all clutter and nonessential materials out of the work area. Only people directly involved with the work being performed should have access to the area.

Safety Symbols

This icon is displayed with any safety alert that indicates a personal injury hazard.

⚠ WARNING

This safety alert indicates a potentially hazardous situation that, if not avoided, **could** result in **death or serious injury**.

⚠ CAUTION

This safety alert, with the personal injury hazard symbol, indicates a potentially hazardous situation that, if not avoided, **could** result in **minor or moderate injury**.

NOTICE

This alert indicates a situation that, if not avoided, **will** result in **damage to the equipment**.

IMPORTANT

This alert indicates a situation that, if not avoided, **may** result in **damage to the equipment**.

Protective Equipment Requirements

WARNING

Always wear impact resistant eye protection while operating or working near this equipment.

For additional information on eye and face protection, refer to Federal OSHA regulations, 29 Code of Federal Regulations, Section 1910.133., Eye and Face Protection and American National Standards Institute, ANSI Z87.1, Occupational and Educational Eye and Face Protection. Z87.1 is available from the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.

CAUTION

Personal hearing protection is recommended when operating or working near this tool.

Hearing protectors are required in high noise areas, 85 dBA or greater. The operation of other tools and equipment in the area, reflective surfaces, process noises, and resonant structures can increase the noise level in the area. For additional information on hearing protection, refer to Federal OSHA regulations, 29 Code of Federal Regulations, Section 1910.95, Occupational Noise Exposure and ANSI S12.6 Hearing Protectors.

VITALS DIAGNOSTICS

The Diagnostics module of Vitals Mobile lets you test electronic and mechanical functions of the valve operator.

Vitals Diagnostics operates the valve operator; use the same safety precautions and procedures that you use when performing valve operations.

Do not use Vitals Diagnostics with the valve operator attached to a valve. Run Diagnostics only in the following circumstances:

- the valve operator is powered on and in operating position;
- the valve operator is **not** attached to a valve;
- all safe operating procedures are in place. See the User Manual for your valve operator.

Figure 2-1. The Diagnostics button on the main screen opens the Vitals Mobile Diagnostics program.

WARNING

Make sure that the valve operator is not attached to a valve when running Diagnostics. Keep clear of moving parts while running Diagnostics, and follow all safety procedures for using the valve operator.

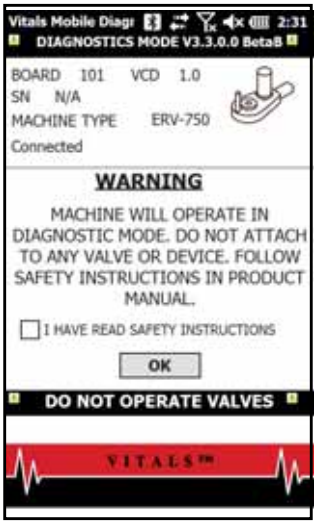


Figure 2-2. The Warning screen appears when you start Vitals Mobile Diagnostics. Read all safety instructions in the manual and verify by clicking the checkbox before you continue.

Chapter 3

Vitals Hardware and Software

In This Chapter

VITALS SYSTEM ARCHITECTURE

HC-100 HANDHELD CONTROLLER WITH VITALS MOBILE

PAIRING DEVICES USING BLUETOOTH

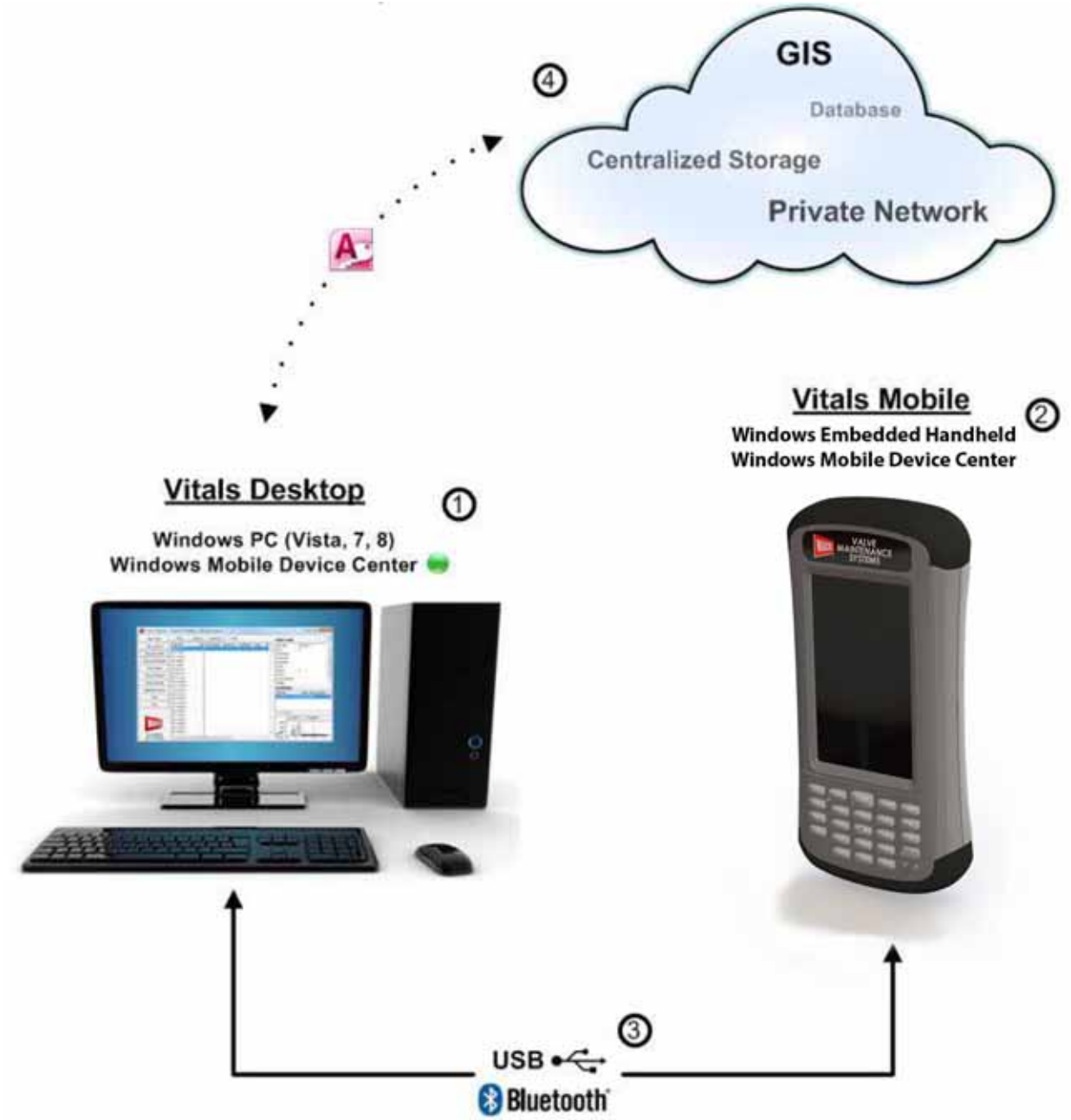
VITALS SYSTEM ARCHITECTURE

Figure 3-1 illustrates the Vitals 3.3 hardware and software architecture.

The **Vitals hardware** is the HC-100 handheld controller. The controller is used to operate E.H. Wachs valve exercising equipment, and store and transfer valve operation data. Chapter 5 describes the controller and how to use it.

The Vitals software has two components:

- *Vitals Desktop* runs on a Windows-based computer. Vitals Desktop lets you manage and analyze valve data. Chapter 6 describes using Vitals Desktop.
- *Vitals Mobile* runs on the HC-100 controller. Vitals Mobile operates the valve exercising equipment and logs valve exercising data. Vitals Mobile is installed on the HC-100 using your PC running Vitals Desktop. (See Chapter 4.)



1. The master database resides in Vitals Desktop. Data is transferred between Vitals Mobile and Vitals Desktop during a data transfer session. Requirements for data transfer: Windows PC with Windows Mobile Device Center, Windows Mobile device, USB or Bluetooth connection.
2. The master database is replicated in Vitals Mobile during a data transfer. Any new valve data created in Vitals Mobile is downloaded into the master database during a data transfer.
3. Connection between Vitals Mobile and Vitals Desktop can be made with a wired USB connection or a wireless Bluetooth connection. Bluetooth connections not supported by E.H. Wachs.
4. Data collected through the Vitals software suite can be exported from Vitals Desktop to your choice of GIS software, private network, or any other location, by your IT or GIS team. (This functionality is not supported by E.H. Wachs.) Vitals database is stored in Microsoft Access format.

Figure 3-1. The diagram illustrates the Vitals software and hardware architecture.

System Requirements

Vitals Desktop requires a Windows PC running Windows 7, 8, or Vista, with a USB port for connecting to the HC-100.

Vitals Mobile runs on the Windows Embedded Handheld operating system installed on the HC-100 controller. It is also compatible with older controllers such as the Trimble Recon.

NOTE

Vitals Desktop 3.3 should be compatible with Windows XP. However, this has not been tested and is not supported, and compatibility is not guaranteed by E.H. Wachs.

Valve Operator Feature Support and Compatibility

The HC-100 controller and Vitals 3.3 are compatible with the following Wachs valve operators. Table 3-1 describes feature support for each valve operator.

- ERV-750
- TM-7
- TM-6

Table 3-1: Vitals Mobile 3.3 Feature Support

Feature	ERV-750	TM-7	TM-6
Manual/emergency valve operation	Yes	Yes	Yes
Automatic "No-assumption" valve exercising	Yes	Yes	Yes
Data logging	Yes	Yes*	Yes*
Bluetooth communication (requires Bluetooth module on valve operator)	Yes	Yes*	Yes*
Vitals Mobile Diagnostics	Yes	Yes**	Yes**

* May require board upgrade on older valve operators; contact E.H. Wachs with serial number for information.
** Not applicable for older TM-7/TM-6 units with silver/yellow controller boxes.

NOTE

The Bluetooth module is rated for operation from -4°F to +122°F (-20°C to +50°C).

HC-100 Handheld Controller with Vitals Mobile

The HC-100 is a ruggedized handheld computer running the Windows Embedded Handheld operating system. It is waterproof and can be used in temperatures from -22°F to +140°F (-30°C to +60°C). The HC-100 has integrated GPS and Bluetooth connectivity. See specifications below.

You can use an external GPS unit for higher-resolution mapping. Input requires NMEA-0183 data format via Bluetooth or RS-232 cable.

Connection Options

Connection between the HC-100 and E.H. Wachs valve operating equipment is made using either the included 79-302-10 control cable or the embedded wireless Bluetooth communication in the HC-100 (requires optional Bluetooth module installed, and may require board upgrade on older TM machines).

The HC-100 connects to the PC running Vitals Desktop using a USB connection. An optional desktop dock (79-110-09), shown in the photo below, is available to provide power and USB connection to the HC-100.

Specifications

Table 3-2: HC-100 Hardware Specifications

Operating System	Microsoft Windows Embedded Handheld
Processor	1.0 GHz ARM Cortex A8 i.MX53
RAM	512 MB
Storage Memory	8 GB
Display	800 x 480, 4.3” WVGA LCD TFT
Battery Life	Up to 20 hours (may be reduced when running GPS)
Battery Charging	2-4 hours to full charge
Ports	Data: USB host (full A), USB client (Micro B), RS-232 9-pin. Power: 12, 24 VDC input, 10-36 V unregulated.
Wireless connectivity	Bluetooth wireless, 2.1 +EDR, Class 1.5, range greater than 100 ft (30 m). Wi-Fi 801.11b/g/n.
GPS	High-sensitivity GPS/GLONASS/SBAS
Size and weight	3.6” w x 7.25” l x 1.5” d (91 mm x 184 mm x 38 mm). 1.3 lb (590 g) with battery.
Temperature	Operating: -22°F to +140°F (-30°C to +60°C)
	Storage: -22°F to +158°F (-30°C to +70°C)
Environmental	IP68 waterproof and dustproof
Drop	Shockproof: multiple drops from 5’ (1.5 m) onto concrete

PAIRING DEVICES USING BLUETOOTH

External GPS

1. In the Home window, turn Bluetooth ON by tapping the Bluetooth icon. (The icon is blue when Bluetooth is ON.) Click **Settings**.

2. Go to **Connections**.

3. Go to **Bluetooth** and click **Add new device...**

4. Click **Pro device** and click **Next**.

5. Go to **Enter Passcode** "0000" and click **Next**. (NOTE: E.H. Wachs Pro 6 GPS uses passcode 0000; other devices might have a different passcode.)

6. Go to **Done**.

7. Click **Pro device** again.

8. You have the option to change the Display Name. Check the **Serial Port** box and click **Save**.

9. Click on the **COM Ports** tab and click **New Outgoing Port**.

10. Click the **Pro device** and click **Next**.

11. Select the **COM Port**. Uncheck the **Secure Connection** box. Click **Finish**.

ERV-750 or TM-7

1. In the Home window, click **Settings** and go to **Connections Bluetooth**. Click **Add new device...**

2. Click the **WACHS MACHINE** device and click **Next**.

3. Go to **Enter Passcode** "1234". Click **Next**.

4. Click **Done**.

Bluetooth
Enter Passcode
Enter a passcode to establish a secure connection with WACHS MACHINE-1A7FDC.
Press 'Next' to continue if a passcode is not required.
Passcode:
Device Added
Your Windows® phone has connected with WACHS MACHINE-1A7FDC.
Done
Advanced

5. Click **WACHS MACHINE** device again.

6. Check the **Serial Port** box and click **Save**. (NOTE: You can customize the **Display Name** (for example, ERV-750, TM7, or any other name.)

7. Click on the **COM Ports** tab and click **New Outgoing Port**.

Bluetooth
Mode
COM Ports
Devices
After pairing with a device, to set up a COM port tap New Outgoing Port. For other options, tap and hold an existing port.
Pro5421440496 [COM9]
New Outgoing Port
OK

8. Click the **WACHS MACHINE** device and click **Next**.

9. Select the **COM Port**. Uncheck the **Secure Connection** box. Click **Finish**.

Chapter 4

Starting Up with Vitals 3.3

You need a CD-compatible drive in your computer to install the software from disk, or Internet access to download the installation file. You will also need a USB port to connect to the HC-100 controller.

There are two steps to start up the Vitals 3.3 software. You must perform them in this order:

1. **Install Vitals Desktop**. Run the Vitals 3.3 install disk on your Windows PC (Windows 7, 8, or Vista). You can also download the installer from the Wachs Utility web-site at **www.turnvalves.com**.
2. **Install Vitals Mobile**. Connect the HC-100 controller to your PC, using the supplied USB cable, and follow the instructions in the "Installing Vitals Mobile" section below.

In This Chapter

WHAT'S INCLUDED

INSTALLING VITALS DESKTOP

INSTALLING VITALS MOBILE

FOREIGN LANGUAGE SUPPORT

WHAT'S INCLUDED

The Vitals 3.3 CD includes the following files:

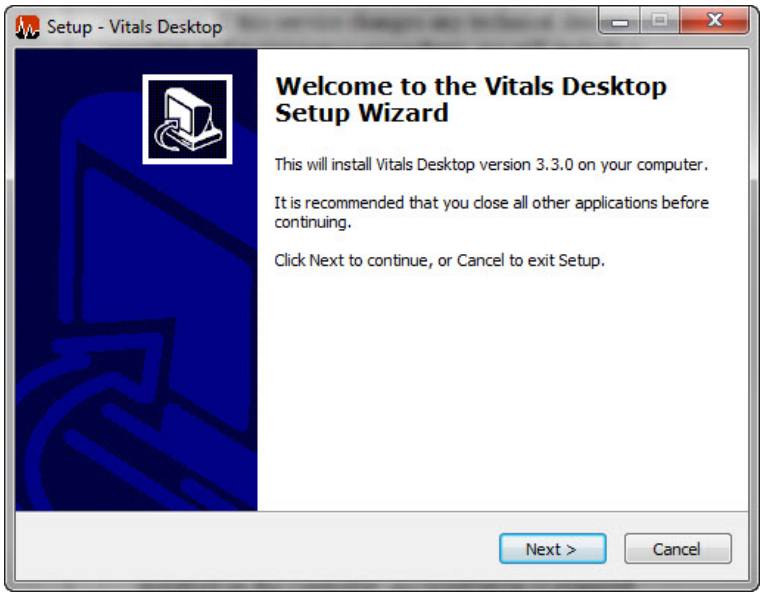
- Vitals Desktop application
- Vitals Reference Manual PDF
- Language pack files
- Windows Mobile Device Center installation files
- Vitals Mobile installation CAB file.

INSTALLING VITALS DESKTOP

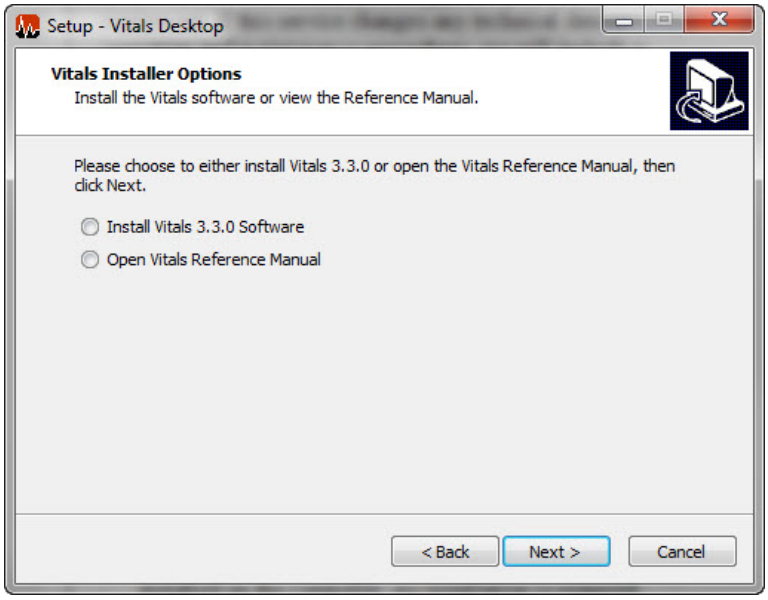
1. Put the Vitals Software disk into the computer's disk tray. The Setup Wizard should begin automatically.

2. The **Select Setup Language** window appears. Choose a language from the dropdown list and click **OK**.

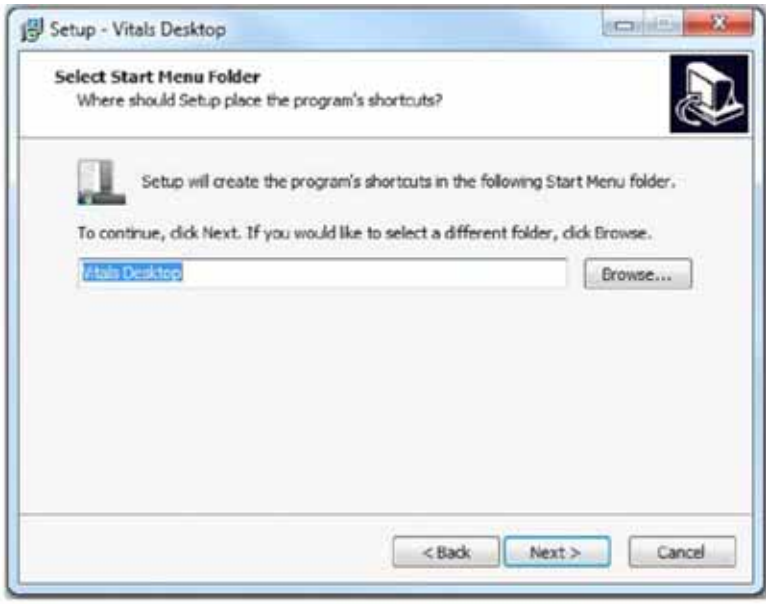
3. The **Setup - Vitals Desktop** window appears. Click **Next** to continue.


Setup - Vitals Desktop
Welcome to the Vitals Desktop Setup Wizard
This will install Vitals Desktop version 3.3.0 on your computer.
It is recommended that you close all other applications before continuing.
Click Next to continue, or Cancel to exit Setup.
Next >
Cancel

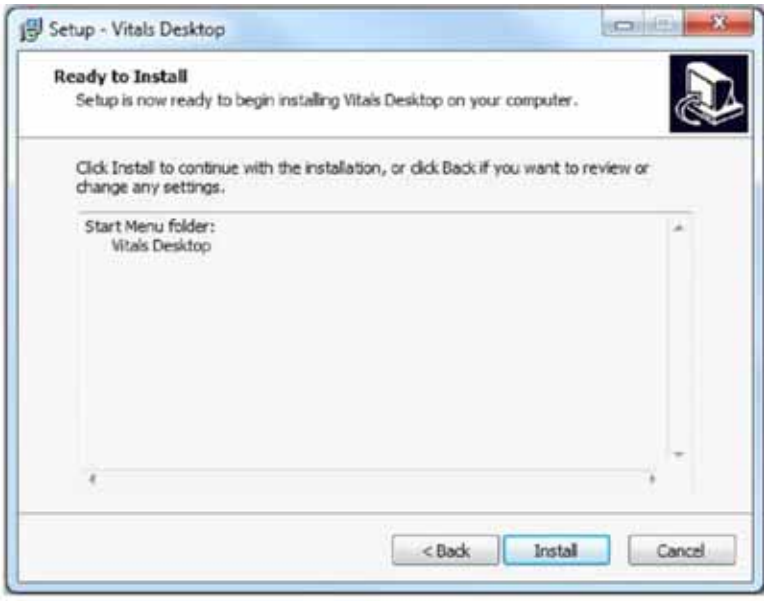
The **Vitals Installer Options** window appears. To proceed with the Vitals installation, select **Install Vitals 3.3 Software** and click **Next**. You can also choose to view the Vitals Reference Manual from this screen. (You can open the manual from the CD at any time.)


Setup - Vitals Desktop
Vitals Installer Options
Install the Vitals software or view the Reference Manual.
Please choose to either install Vitals 3.3.0 or open the Vitals Reference Manual, then click Next.
Install Vitals 3.3.0 Software
Open Vitals Reference Manual
< Back
Next >
Cancel

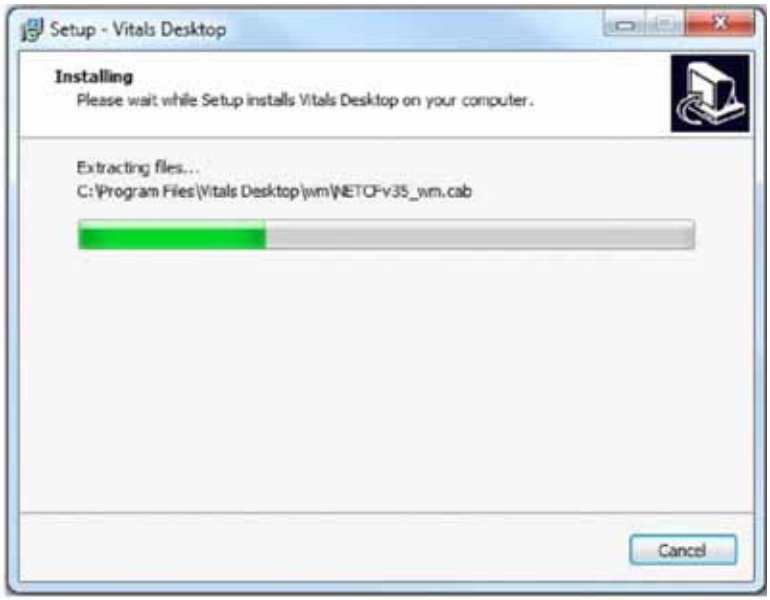
The **Select Start Menu Folder** window appears. Choose a location for the shortcut to open Vitals; to install the Vitals shortcut to its default location, simply click **Next**.


Setup - Vitals Desktop
Select Start Menu Folder
Where should Setup place the program's shortcuts?
Setup will create the program's shortcuts in the following Start Menu folder.
To continue, click Next. If you would like to select a different folder, click Browse.
Vitals Desktop
Browse...
< Back
Next >
Cancel

The **Ready to Install** window appears, showing the location of the Vitals Desktop Start Menu shortcut. (Another Vitals Desktop shortcut will be provided on the user's desktop.) Click **Next**.


Setup - Vitals Desktop
Ready to Install
Setup is now ready to begin installing Vitals Desktop on your computer.
Click Install to continue with the installation, or click Back if you want to review or change any settings.
Start Menu folder:
Vitals Desktop
< Back
Install
Cancel

The **Installing** window appears, showing the progress of the installation along with a list of files that are installed.



Once the installation is complete, the Setup Wizard will confirm that the installation has completed and Vitals Desktop has been installed. Click **Finish**. The Vitals Desktop software is now ready to use.

Setup - Vitals Desktop
Completing the Vitals Desktop Setup Wizard
Setup has finished installing Vitals Desktop on your computer. The application may be launched by selecting the installed icons.
Click Finish to exit Setup.
Finish

INSTALLING VITALS MOBILE

The latest version of Vitals Mobile comes pre-installed on the HC-100 controller. As newer versions of Vitals Mobile become available, they can be installed using the following procedure. (When there is a newer version of Vitals Mobile, you will be prompted to install it on the HC-100 during a Data Transfer.) It is recommended to have the same versions (3.3.x) of Vitals Mobile and Vitals Desktop software.

You must have Vitals Desktop installed on your PC to perform the installation.

1. With the HC-100 controller off, connect it to the PC using the supplied USB cable.
2. Turn on the HC-100.
3. Windows Mobile Device Center should open on the PC.

Windows Mobile Device Center
Home
Windows Mobile
Set up your device
Get Outlook contacts, calendar, e-mail and other information on your device.
Connect without setting up your device
Connected

Figure 4-1. Windows Mobile Device Center will recognize the HC-100 controller.

4. Start the Vitals Desktop application.

5. In the Vitals Desktop menu, click **Data Transfer**. The **Data Transfer** dialog box should open.Click **START**.

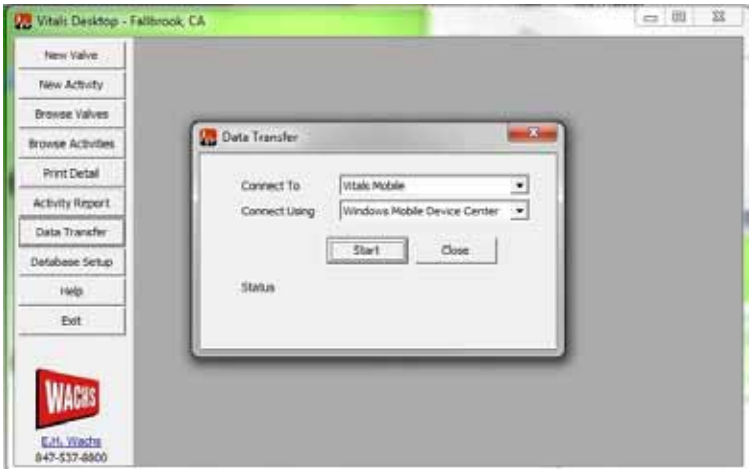


Figure 4-2. Click **Start** *when the* **Data Transfer** *dialog appears.*

6. Vitals Desktop detects whether the controller has Vitals Mobile installed (including updates to the latest version). Click **Yes** to install Vitals Mobile.

Windows Mobile Device Center
Home
Windows Mobile
Set up your device
Get Outlook contacts, calendar, e-mail and other information on your device.
Connect without setting up your device
Connected

Figure 4-1. Windows Mobile Device Center will recognize the HC-100 controller.

4. Start the Vitals Desktop application.

5. In the Vitals Desktop menu, click **Data Transfer**. The **Data Transfer** dialog box should open. Click **START**.

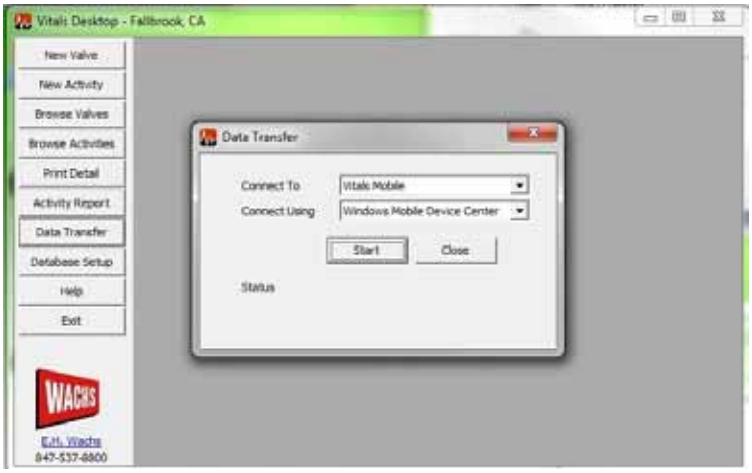


Figure 4-2. Click **Start** *when the* **Data Transfer** *dialog appears.*

6. Vitals Desktop detects whether the controller has Vitals Mobile installed (including updates to the latest version). Click **Yes** to install Vitals Mobile.

7:14
vitals mobile.cab was successfully installed on your device.
If you need more storage space, you can remove installed programs.
OK

Figure 4-5. The HC-100 shows when the Vitals installation is complete.

9. After Vitals Mobile successfully installs on the controller, click the **OK** button in Vitals Desktop.

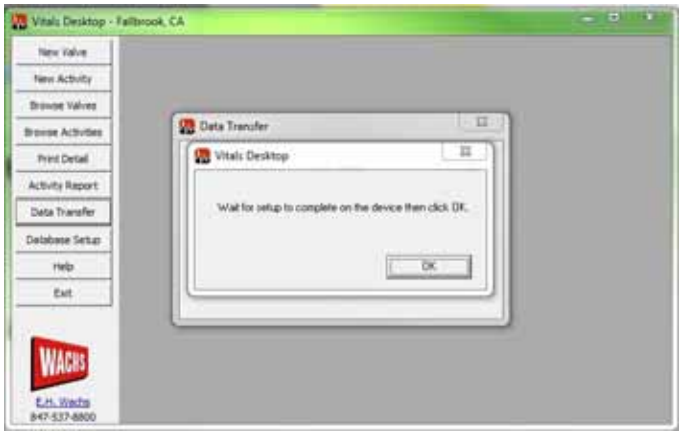


*Figure 4-6. Click **OK** to finish the installation and start the database transfer.*

10. Vitals Desktop will sync the database on the HC-100. Click the **Close** button when data transfer is complete.

Figure 4-7. When the transfer is complete, click **Close**.

FOREIGN LANGUAGE SUPPORT

Foreign languages are supported by first installing the language file on the Vitals Desktop PC. During a Data Transfer, the available languages are pushed out to the Vitals Mobile.

1. Make sure the new language filename is in the format **strings.Language.txt**, where "**Language"** is the name of the language into which the file has been translated.
2. Copy the language file into the following directory on your computer: C:\Program Files\Vitals Desktop\strings.
3. Open Vitals Desktop and select **Help >> Set Language.** Confirm that the new language has been added to the Vitals software.
4. A language in Vitals Desktop will be automatically uploaded to Vitals Mobile during a Data Transfer. To change the Vitals Mobile operating language, simply perform a Data Transfer while using the desired language on Vitals Desktop.

- In Vitals Desktop, some languages will require a change to the Administrative System Locale under the Region and Language settings on your Windows system in order to view special characters properly.
- Certain languages are not available in the Locale Settings on Windows Mobile devices. In order to view spe-

cial characters for these languages, a language-specific firmware version is required.

- In order to easily input special characters for certain languages, third-party input software may be installed.

Chapter 5

HC-100 Handheld Controller

The HC-100 handheld controller runs the Vitals Mobile software. Vitals Mobile operates the valve exerciser and stores valve exercising data. You can transfer valve records from your PC running Vitals Desktop to the controller, or enter valve records using Vitals Mobile while in the field.

In This Chapter

STARTING VITALS MOBILE

VITALS MOBILE CONTROLLER OPERATION

VITALS MOBILE DIAGNOSTICS

STARTING VITALS MOBILE

1. The Vitals Mobile icon appears on the HC-100 home screen. Tap the icon to start the program.

Figure 5-1. HC-100 home screen. Press the Home button on the keypad at any time to return to the home screen.

2. The **Vitals Mobile** main screen appears.

Figure 5-2. Vitals Mobile Main Screen

Main Screen Reference

- The **New Activity** button starts a new valve activity with data logging. Choose an existing valve ID, create a new one, or open the data entry screen. Search for nearby valves (within a 25-foot range) by pressing the **GPS Search** button.
- The **Saved Activities** button opens the saved activities screen, containing a list of previously saved activities since the last Data Transfer.
- The **Controller** button opens the Vitals Controller program, enabling you to exercise a valve. Some activity information will be automatically entered, while most information will be left blank, giving you the option to enter data and save the activity after the exercise.
- The **Diagnostics** button opens the valve Diagnostics program, which helps identify valve operator problems.
- The **Tap to connect GPS** button enables the GPS receiver. See the section titled ENABLING AND USING GPS for more information.
- The **Menu** button displays the following commands.

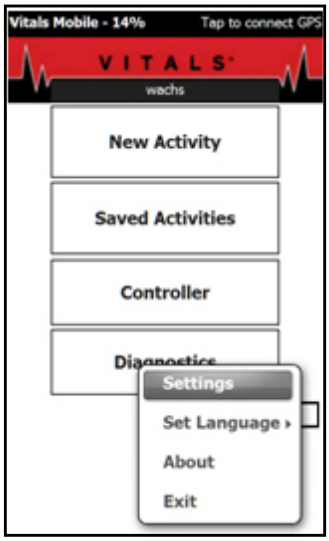


Figure 5-3. Vitals Mobile command menu

- The **Settings** command opens the Vitals Mobile options screen. This screen contains settings for machine connection, GPS, and the default torque limit. (See “Changing Settings” below.)
- The **Set Language** command has a dropdown for language choices available in Vitals Mobile.

Figure 5-4. Selecting the language for Vitals Mobile.

- The **About** command displays the Vitals Mobile **About** screen, with version information.

Figure 5-5. The About screen displays version information.

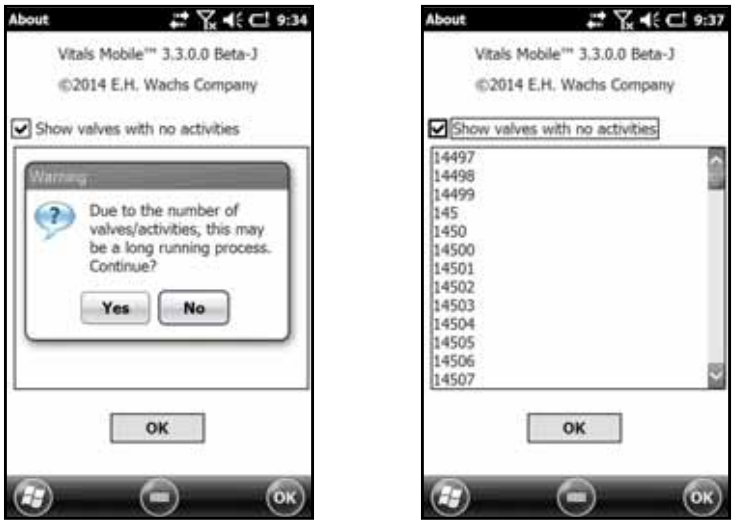


Figure 5-6. Tap the **Show valves with no activities** *checkbox to display a list of valve in the database that have no activity records.*

- The **Exit** command quits the Vitals Mobile program. To re-start the program, tap the Vitals Mobile icon on the HC-100 home screen.

Changing Settings

You can select COM ports for the valve operator controller, the GPS (embedded or external), and USB data connection.

1. Tap the **Menu** button and select **Settings** from the menu.

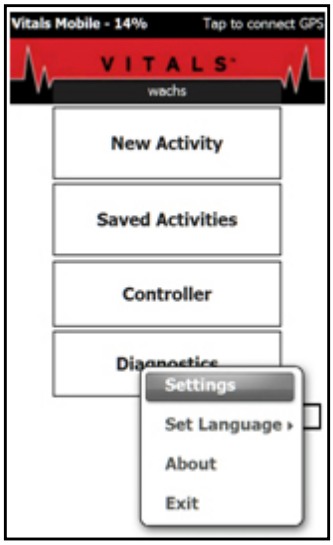


Figure 5-7. Select **Settings** *from the menu.*

2. The settings screen appears, displaying current port settings.

Figure 5-8. Ports settings are displayed on the settings screen.

3. To assign a port for the valve operator controller, tap the dropdown for **Controller COM Port**. For a cable connection, the port will be COM1. For a Bluetooth connection, it will be the COM port set up using the Windows Bluetooth settings.

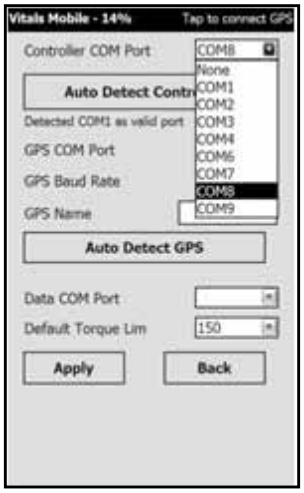


Figure 5-9. Select the port number for the valve operator controller.

4. Tap the **Auto Detect Controller** button to check all COM ports for a valid machine connection either cable or Bluetooth). The **Checking available ports** message will appear. When a valid port is detected, the **Detected COMx as valid port** message will appear.

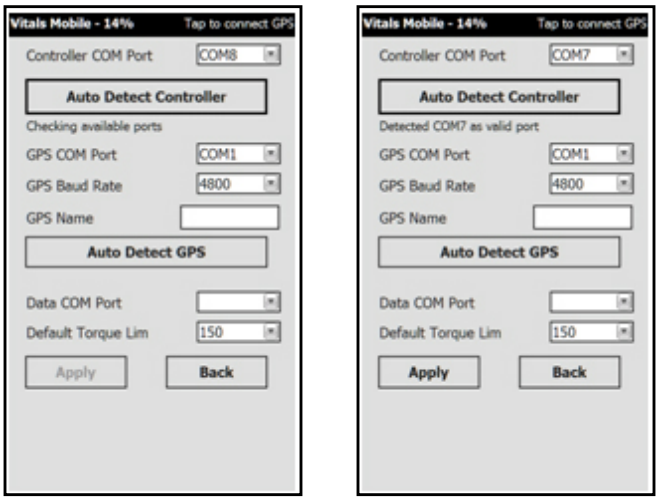


Figure 5-10. (Left) checking for available controller port; (right) controller port connected.

5. Tap the **Apply** button to save the settings.

6. To change the port for the GPS, tap the dropdown for **GPS COM Port**. Select the appropriate COM port.

NOTE

If a Bluetooth connection is lost or turned off, Vitals Mobile requires about 15 seconds to close the port before it can be re-opened. After closing a Bluetooth connection, wait at least 15 seconds to re-open it.

NOTE

HC-100 internal GPS:
GPS COM Port: COM8
GPS Baud Rate: 115200.

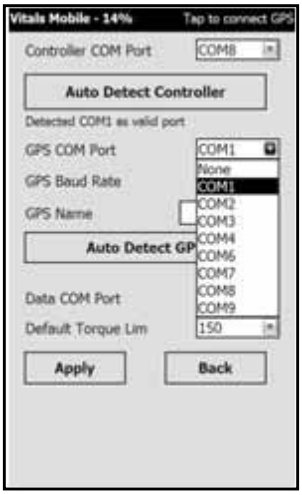


Figure 5-11. Select the port number for the GPS.

7. Set the GPS baud rate by tapping the **GPS Baud Rate** dropdown and selecting the required number.

NOTE

HC-100 internal GPS:
GPS COM Port: COM8
GPS Baud Rate: 115200.

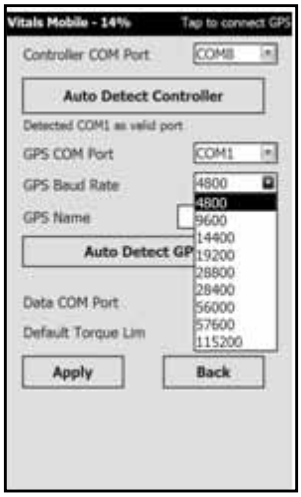


Figure 5-12. Select the baud rate for the GPS. (See specifications for your GPS unit.)

Figure 5-13. You can type a name for the GPS connection.

8. The **Auto Detect GPS** button detects for an available GPS COM port and baud rate automatically. **Checking available ports** appears when the handheld looks for a GPS. The **Detected COMx as valid port** message appears when a valid GPS is detected.

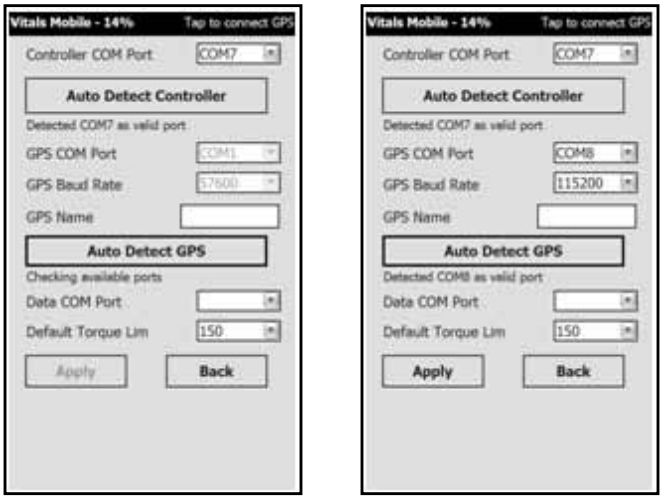


Figure 5-14. (Left) checking for available GPS port; (right) GPS port connected.

9. **Data COM Port** is only used for legacy device support. **Data COM Port** should be blank or **None** unless instructed otherwise by E.H. Wachs.

10. **Default Torque Limit** sets the Torque Limit when starting a new activity. Default value is 150 ft-lb.

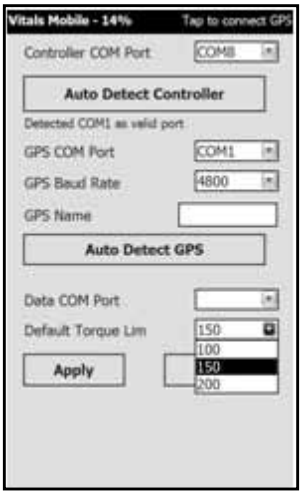


Figure 5-15. Select the default torque limit for valve exercising.

11. Tap the **Apply** button to save and activate the changes. A **Warning** dialog will ask to confirm the changes.

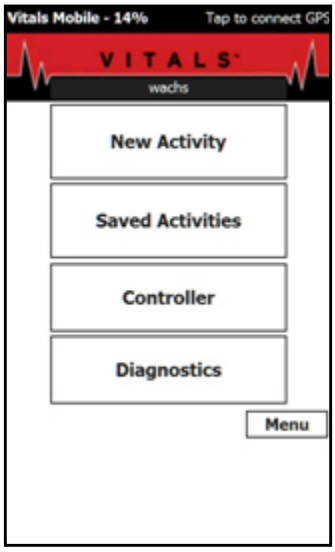
Figure 5-16. After tapping **Apply**, *tap the* **Yes** *button to confirm your changes to the settings.*

VITALS MOBILE CONTROLLER OPERATION

Vitals Controller

The Vitals Controller is the program for operating E.H. Wachs valve operators. If using a cable connection, make sure the control cable is connected to the serial port on the controller and to the port on the valve exerciser. If using a Bluetooth connection, make sure a Bluetooth module is properly installed on the machine's electronic board and that the Bluetooth settings on the controller device have been properly set up.

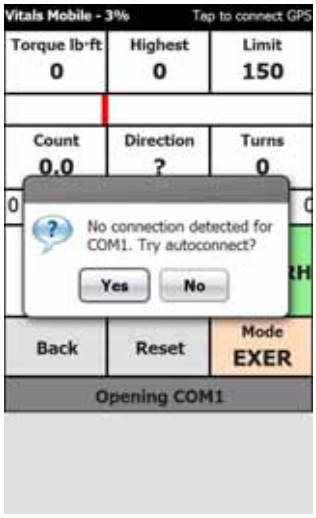
1. On the **Vitals Mobile** screen, tap the **Controller** button.



E.H. Wachs "No-Assumption" Valve Exercising
When you run the valve operator in EXER mode, it uses the "no-assumption" exercising protocol to determine direction of valve rotation.

Refer to Appendix A for a detailed description of the no-assumptions protocol.

If connection is not detected when the Vitals controller screen opens, a message will ask if you want to autoconnect. Tap **Yes**.



You can tap the **Tap to connect** button to try to make a connection to the valve operator using the saved COM port in the settings.

2. The **Vitals Controller** screen appears.

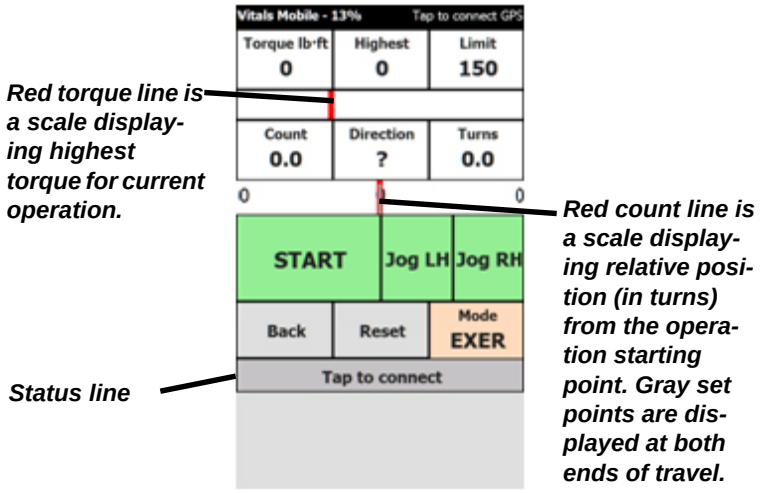
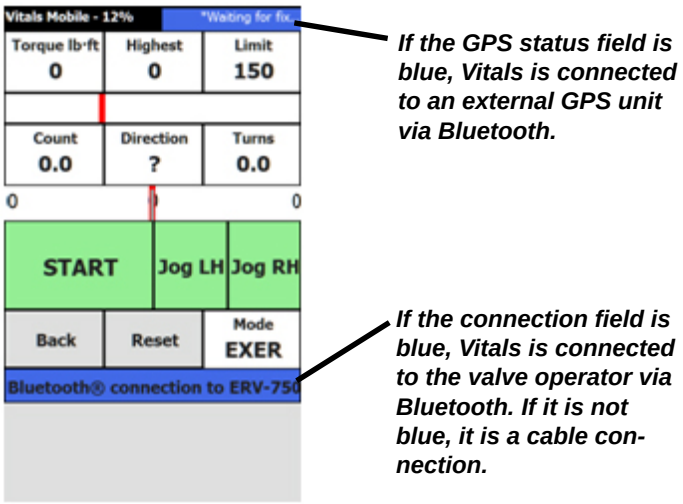


Figure 5-17. Vitals Controller

3. **Tap to connect GPS** at the top of the screen makes the GPS connection. Status of the connection will appear after you tap the command.



4. The **Torque lb-ft** field displays the current operating torque.

5. The **Highest** field displays the highest torque level during the current operation.

6. The **Limit** field displays the current torque limit. (To change the default torque limit setting, go **Back** to the main screen and tap the **Settings** button. Select a

Default Torque Limit and tap the **Apply** button, then confirm the "Changing Settings" dialog.)

7. The **Count** field displays the current position, in number of turns from the starting point (positive or negative).

8. To override the automated exercising program and set a starting direction, tap the **Direction** button until either **RH** or **LH** appears. Leave the question mark in the display for automatic direction control.

9. The **Turns** field displays the total number of turns performed, in both directions, during the current operation.

10. Press **START** to begin the valve operation. The valve exerciser will run in the selected mode. The button will turn red and the text will change to **STOP**.

11. To turn the valve exerciser slightly in either direction (for positioning or installing the valve key), tap and hold on the **Jog LH** or **Jog RH** button. The operator will turn as long as you keep touching either of these buttons.

12. By default, the valve exerciser mode is **EXER**, which runs the valve exercising protocol. To operate in manual mode, tap the **Mode** button to change it to **MAN**.

13. Press **STOP** to end the valve operation. The button will blink white and green and the text will change to **START**.

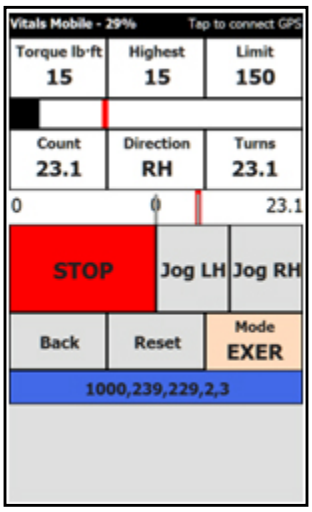
14. To reset the valve operation readings and the operating defaults, tap and hold the **Reset** button.

15. The status line shows details of the currently active connection or operation. You can tap the status line to toggle through current status messages, including operating values, connection messages, and exercising status messages.

16. If the status line is a string of numbers, it is displaying the current connection type and machine selection.

    - turn count
    - transducer 1 value
    - transducer 2 value

- machine ID
- machine status.

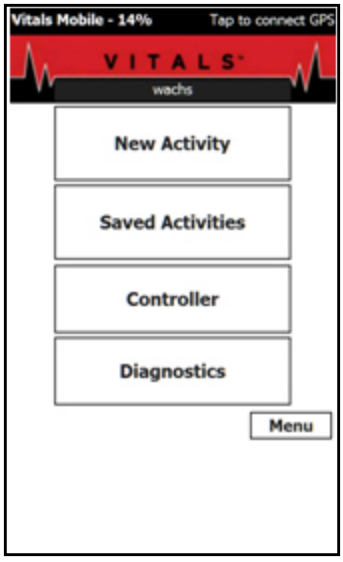


17. To exit the Vitals Controller program, tap the **Back** button.

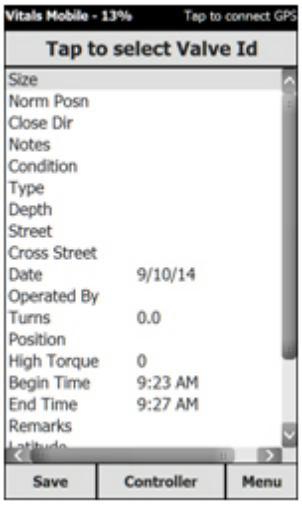
Valve Operation with Data Logging

Starting a New Valve Activity

1. Tap the **New Activity** button on the Vitals Mobile screen.



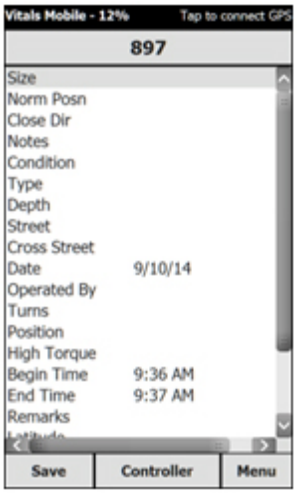
2. The **Valve ID** screen appears.



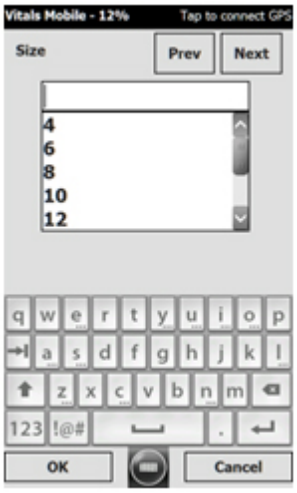
3. Tap the **Tap to select Valve ID** button. The **Enter Valve ID** screen appears, with a keypad at the bottom.

- Type in the ID of the valve you are exercising. Tap the **ABC** button to enter letters.
- You can tap the **GPS Search** button to search for pre-existing nearby valves (with a 25-foot radius).

4. If the ID of the valve is not in the database, the screen will display **No records found**. You can tap the **OK** button to create a new valve record with the ID you typed.



5. To enter data for any of the fields on the Valve Record screen, tap the field name. A data entry screen will appear. Enter the data and tap the **OK** button to return to the Valve Record screen. To continue to the next or previous field, tap the **Next** or **Prev** button.



6. To record GPS location, tap either **Latitude** or **Longitude**. When you have the GPS receiver enabled, the GPS device will automatically log coordinates and the **Latitude**, **Longitude**, and **GPS Positions** fields will be filled in.

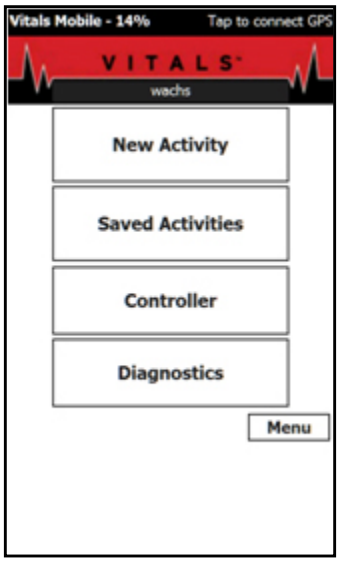
7. Tap **Controller** to enter the Vitals Controller screen. Tap **Menu** to view valve history specific to that valve, delete the valve activity, or open the options screen.

8. After entering information for a new valve activity and tapping the **Controller** button, operate the valve exerciser as described in section “Vitals Controller Operation”.

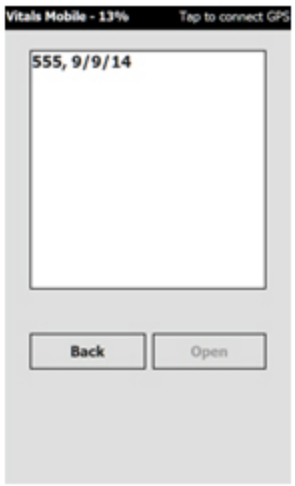
9. After the activity is complete, click the **Back** button on the Vitals controller screen, then click **Save** to save the activity record data.

Accessing Saved Activities

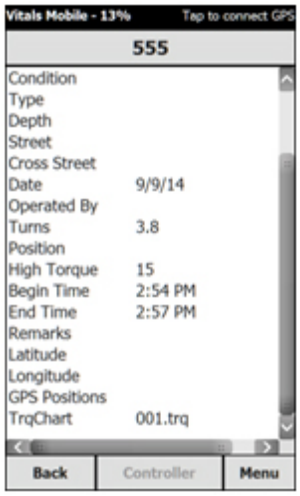
1. To access previously saved activities, tap the **Saved Activities** button on the Vitals Mobile main screen.



2. A screen appears with all of the activities that have been saved within Vitals Mobile since the last Data Transfer.

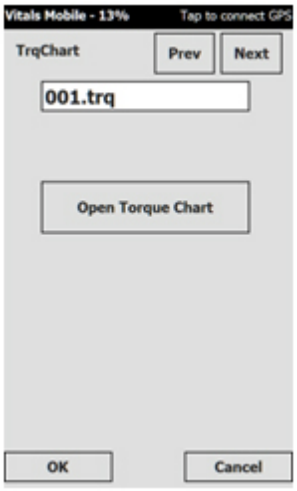


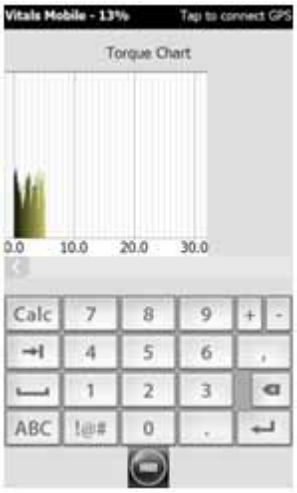
3. To edit a saved activity, highlight the desired valve and tap the **Open** button. The valve record screen will appear.



4. To edit the activity information, tap a field and update the information, as described above in "Starting a New Valve Activity". To save the activity, tap the **Save** button. The **Controller** button is disabled to prevent overwriting a completed activity.

5. If you tap **TrqChart**, the **TrqChart** screen appears. You can search for a torque chart for the selected valve ID, and display the chart.





6. Tap the **Back** button to exit the Saved Activities screen.

NOTE

Vitals 3.3 will only save 999 torque charts. If 999 torque charts are saved and you start a new activity, you will get a message saying that no torque chart will be saved. You can still perform the activity. To record more torque charts, download saved activities to Vitals Desktop.

Enabling and Using GPS

GPS Status Bar Statements and Enabling GPS Receivers

You can automatically detect and log valve positions using the GPS receiver installed in the HC-100. Enable the GPS receiver first. Refer to the following messages at the top of the Controller screen.

- **Tap to connect GPS** - Indicates the GPS port is disconnected. Tap to enable GPS.
- **Connecting GPS** - Indicates the GPS port is being configured to receive data.
- **Waiting for data** - The GPS port has been opened and is waiting for GPS data.
- **Waiting for fix** - The GPS receiver is identifying GPS satellites from which to gather data for determining position. This may take several minutes.
- **HDOP 2.3 Sats 9W** - This is an example of the "connected" GPS status message. The numbers may differ depending on signal strength and number of satellites detected.

NOTE

HDOP is the Horizontal Dilution of Precision. The number immediately after HDOP provides an indication of the positional accuracy based on the current GPS signal and satellite positions. An HDOP of 1 is ideal. Higher numbers indicate worse accuracy. HDOP less than 1 indicates receiver is using SBAS to improve accuracy.

Logging GPS Positions

You can increase GPS accuracy by logging positions over a period of time. To do this, tap the **Tap to connect GPS** command in the top right corner of the Vitals Mobile screen.

A "**connected**" GPS status message will appear, such as **HDOP 2.3 Sats 9W**, indicating that the GPS receiver is pulling coordinates.

To view the number of GPS readings and Latitude and Longitude coordinates, enter the valve record screen and scroll down to the **Latitude**, **Longitude**, and **GPS Positions** fields. The number of GPS positions increments with each GPS reading taken. The position is logged every 1.5 seconds.

VITALS MOBILE DIAGNOSTICS

Use the Vitals Mobile Diagnostics program to identify problems with the valve operator or GPS function.

Vitals Diagnostics operates the valve operator; use the same safety precautions and procedures that you use when performing valve operations.

Do not use Vitals Diagnostics with the valve operator installed on a valve. Run Diagnostics only in the following circumstances:

- the valve operator is powered on and in operating position;
- the valve operator is **not** engaged with a valve;
- all safe operating procedures are in place. See the User Manual for your valve operator.

Before using the Diagnostics program, make sure you are familiar with the safety instructions for your valve operator. Refer to the valve operator user manual.

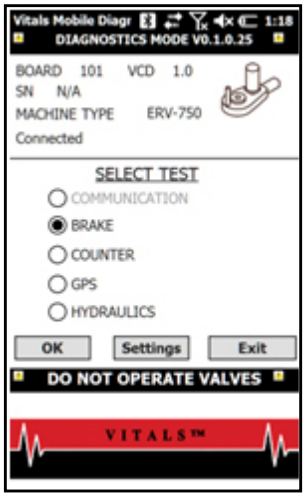
1. Tap the Diagnostics button on the Vitals Mobile main screen. The Diagnostics **WARNING** screen appears.

2. Tap to select the **I HAVE READ SAFETY INSTRUCTIONS** checkbox, then tap **OK**.

3. The **SELECT TEST** screen appears.

NOTE

Vitals Diagnostics is **designed** to thoroughly check the data connection between the control board and the controller. Noise, incorrect data packets, etc. will prevent a connection! Use Direct Connect Cable to check for wiring/connector issues. (Vitals Mobile is not particular in establishing a machine connection. If Vitals Mobile connects, but Vitals Diagnostics does not, it indicates a connection issue.)



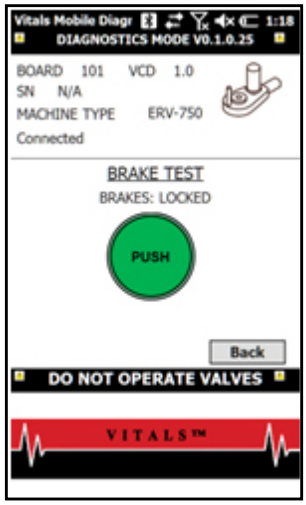
- The **BRAKE** test checks locking and releasing the valve operator brake.
- The **COUNTER** test checks the operation of the rotation counter.
- The **GPS** test checks the operation of the GPS unit.
- The **HYDRAULICS** test checks operation of the hydraulic system and the pressure transducers.

4. Tap the checkbox for the test you want to run and tap **OK**.

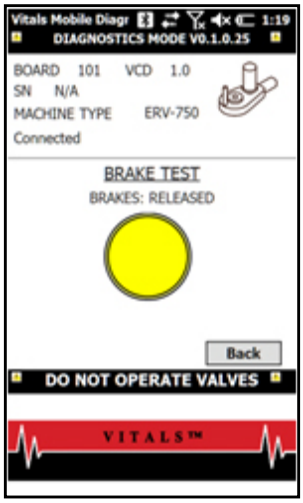
5. After you have run the desired test(s), return to the **SELECT TEST** screen and tap the **Exit** button to quit the Diagnostic program.

Brake Test

1. When the brake test starts, the brake on the valve operator is locked. Tap and hold the green **PUSH** button.



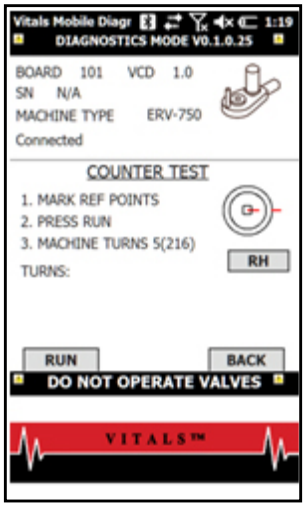
2. The button turns yellow and the status changes to **BRAKES: RELEASED**. Take your finger off the button to lock the brake again.



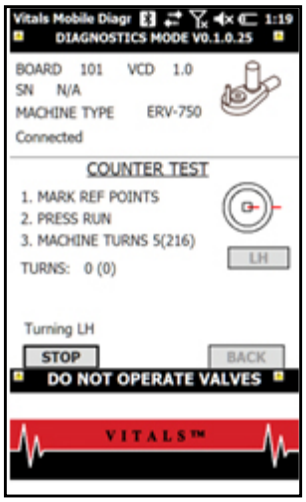
3. To exit the brake test, tap the **Back** button.

Counter Test

1. The direction button reads either **RH** (right-hand) or **LH** (left-hand). Tap the direction button to change the test direction.

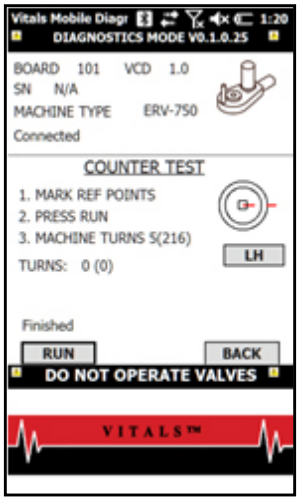


2. Tap the **RUN** button to start the test. The test for the selected direction starts. The button changes to read **STOP**.



3. The status changes as the test is conducted. When the message at the bottom reads **Finished**, the test is complete.

4. If you want to test in the opposite direction, tap the direction button (**RH**/**LH**) to change it and tap **RUN**.



5. To exit the counter test, tap the **Back** button.

GPS Test

1. Tap the **START** button to start the test.

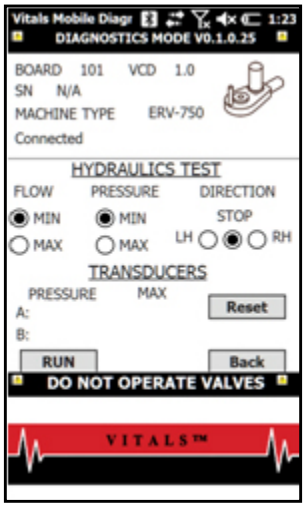
2. The test begins and the button changes to read **STOP**. The status changes as the test is conducted.

3. Press the **STOP** button to end the test.

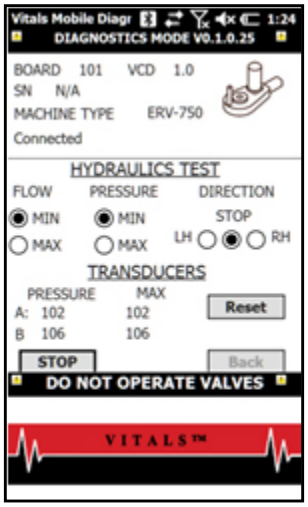
4. To exit the GPS test, tap the **Back** button.

Hydraulics Test

1. Tap to select the **FLOW** (**MIN** or **MAX**), **PRESSURE** (**MIN** or **MAX**), and **DIRECTION** (**LH** or **RH**).

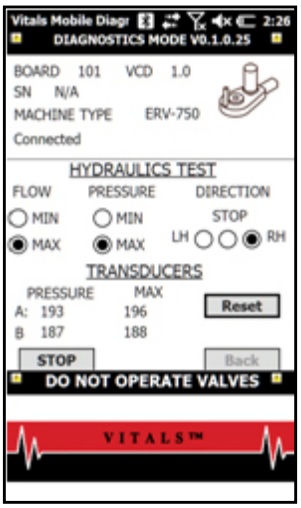


2. Tap the **RUN** button to start the test. The test for the selected parameters begins, and the button changes to read **STOP**.



3. The status changes as the test is conducted. Press the **STOP** button to end the test.

4. If desired, you can change the test parameters and run additional tests.



5. To exit the hydraulics test, tap the **Back** button.

Diagnostics Logs

Vitals Mobile creates a log file any time Vitals Diagnostics is run, or any errors are detected while using Vitals Mobile. Error logs are transferred to the Vitals Desktop folder during a data transfer.

The log file is named **log.txt**. Log files are stored on the Vitals Desktop PC in one of two locations (depending on

whether Vitals Desktop is being run with administrator user access controls).

- C:\Program Files\Vitals Desktop\import
  (Vitals Desktop run as an administrator)

Or

- C:\Users\xxxx\AppData\Local\VirtualStore\Program Files\Vitals Desktop\import
  (xxxx will be replaced by your actual username)
  (Vitals Desktop run using UAC controls)

Email this log file to Tech Support when requested.

Chapter 6

Using Vitals Desktop 3.3

Vitals Desktop 3.3 provides a database for managing your valve records and tools for analyzing valve exercising data. You can create multiple database files, and can create valve records manually or import them from the Vitals Mobile device. Selected valve records can be exported to the controller to have it ready for valve operations in the field.

Vitals Desktop runs on a Windows-based PC. It is compatible with Windows Vista, Windows 8, and Windows 7.

(Vitals Desktop 3.3 should be compatible with Windows XP. However, this has not been tested and is not supported. Compatibility is not guaranteed by E.H. Wachs.)

Instructions for installing Vitals Desktop are in Chapter 4.

In This Chapter

INITIAL START-UP

SCREEN REFERENCE

CREATING AND EDITING VALVES AND ACTIVITIES

ANALYZING VALVE DATA

PRINTING

TRANSFERRING DATA BETWEEN VITALS DESKTOP AND VITALS MOBILE

DATABASE OPTIONS

HELP OPTIONS

HELP OPTIONS

INITIAL START-UP

When you start Vitals Desktop 3.3 for the first time, you will be prompted to **Select a Default Language**.

NOTE

You will also be prompted to S**elect a Default Language** if a default language file is not present.

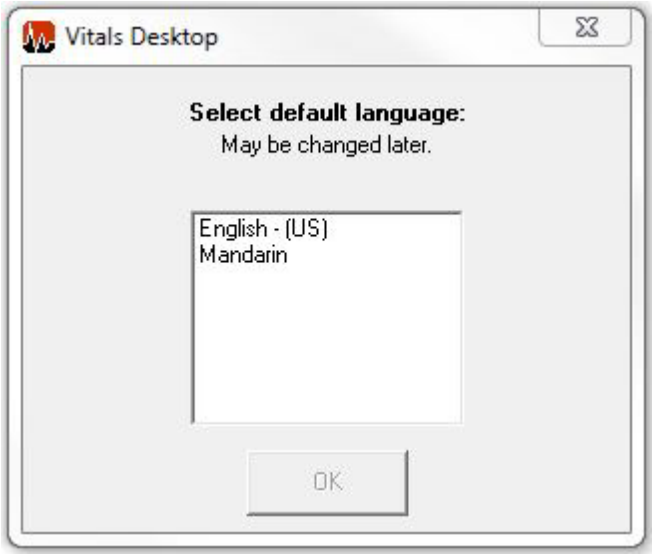


Figure 6-1. Select Default Language

SCREEN REFERENCE

This section describes the functions available on the Vitals Desktop 3.3 screens.

Main Screen

The Main Screen is displayed when Vitals Desktop 3.3 is first opened.

Figure 6-2. Vitals Desktop Main Screen

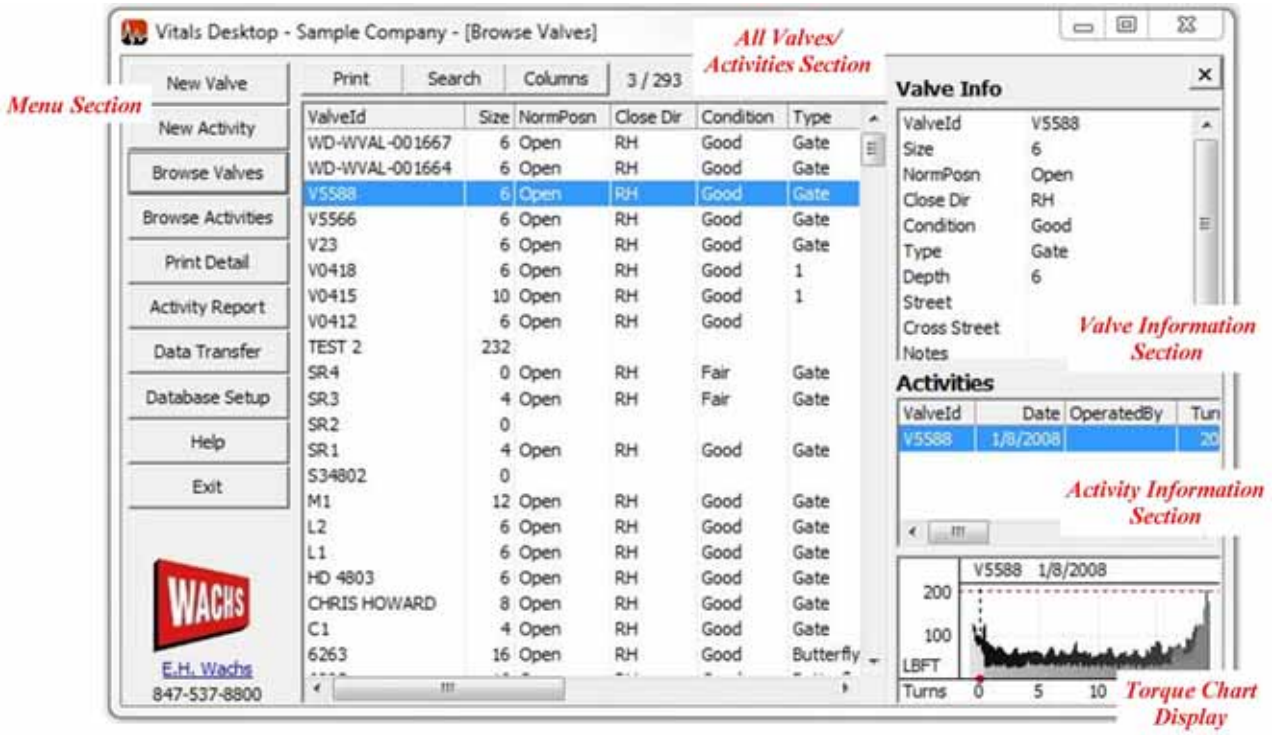


Figure 6-3. Vitals Desktop Screen Sections

- The Menu Section displays menu buttons for all application menu actions.
- The All Valves/Activities Section displays all valves or activities present in the currently open database, depending on whether you are browsing valves or activities.
- The Valve Information Section displays the valve records matching the current search/display criteria.
- The Activity Information Section displays the activity records matching the current search/display criteria. If you click on a valve record, the activities for that valve are displayed here.
- The Torque Chart Display shows the torque chart for the currently selected activity from the Activity Information section.

CREATING AND EDITING VALVES AND ACTIVITIES

Valve Record

Double click on any valve record in the Valves section to bring up the valve record window.

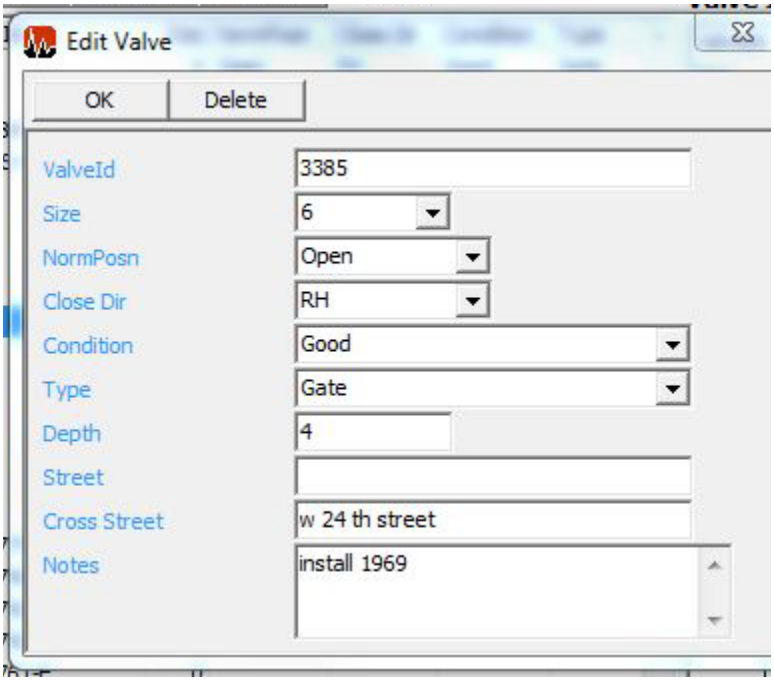


Figure 6-4. Create/Edit Valve

- You can edit the information in the valve record, and click the **OK** button to save changes.
- Click the **Delete** button to delete the valve record. You will be prompted to confirm that you want to delete it.
- You can also access this form and create a new valve record by clicking the **New Valve** button in the Menu Section on the left-hand side of Vitals Desktop.

Activity Record

Double click on any activity in the Activities section to display the activity record window.

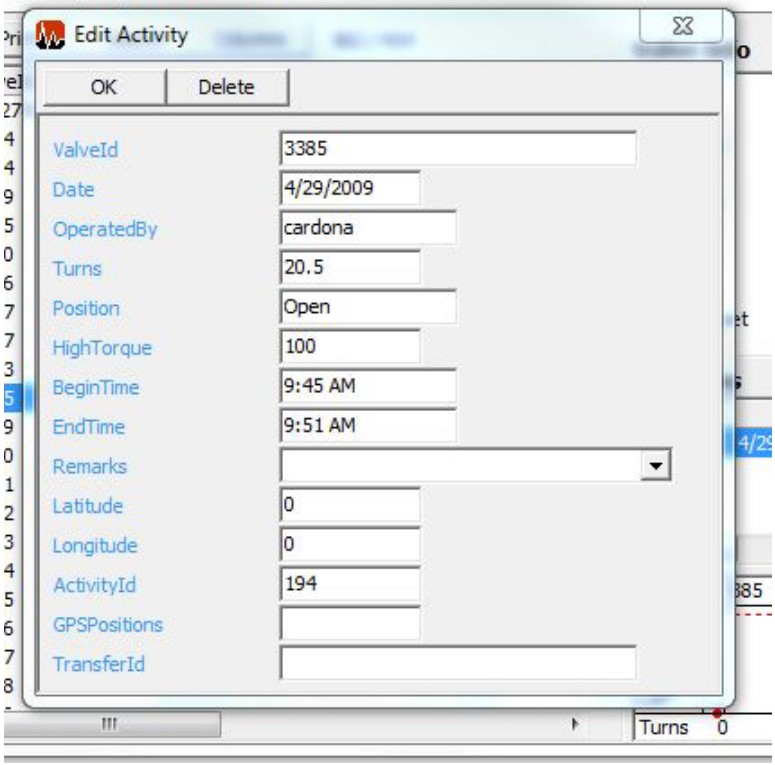


Figure 6-5. Create/Edit Activity

- You can edit the information in the activity record, and click the **OK** button to save changes.
- Click the **Delete** button to delete the activity record. You will be prompted to confirm that you want to delete it.
- You can also access this form and create a new activity record by clicking the **New Activity** button in the Menu Section on the left-hand side of Vitals Desktop. (When creating a new activity for a specified valve ID, a valve with the that ID must exist in the database.)

Remarks List Window

The Select Remarks window displays the remarks you have defined and allows you to create new remarks.

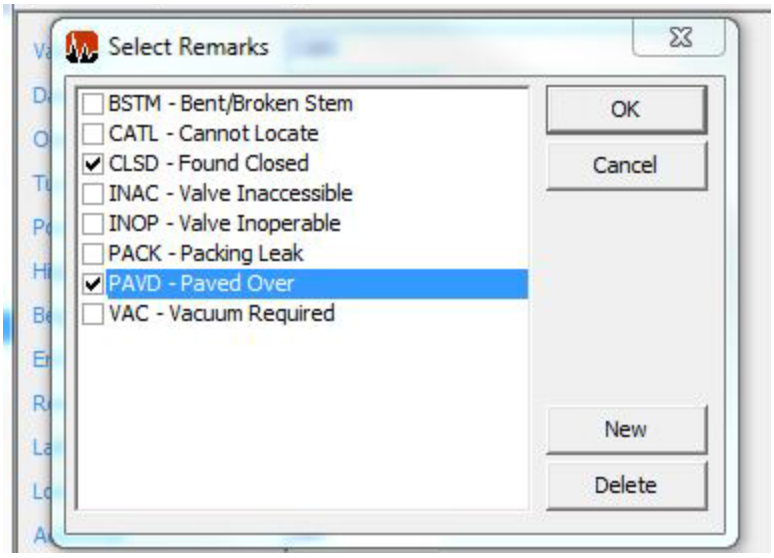


Figure 6-6. Select/Create Remarks

- The Select Remarks window is accessible by choosing the **Remarks** dropdown section in a New/Edit Activity window. (You can also access this window by clicking **Remarks List** in the Database Setup window.)
- Click **OK** or **Cancel** to close the Select Remarks window.
- Click **New** to enter a new remark.
- Click **Delete** to remove the highlighted remark from the list. You will be prompted to confirm that you want to delete the remark.
- The four-letter remark ID displays the ID of the remark. You cannot edit an existing remark ID.
- The remark description displays the description of the remark. The description can be up to 20 characters.

ANALYZING VALVE DATA

Displaying Valve/Activity Records

1. To display all the valve or activity records in the currently open database, click either the **Browse Valves** or **Browse Activities** button in the Menu Section on the left-hand side of Vitals Desktop 3.3.

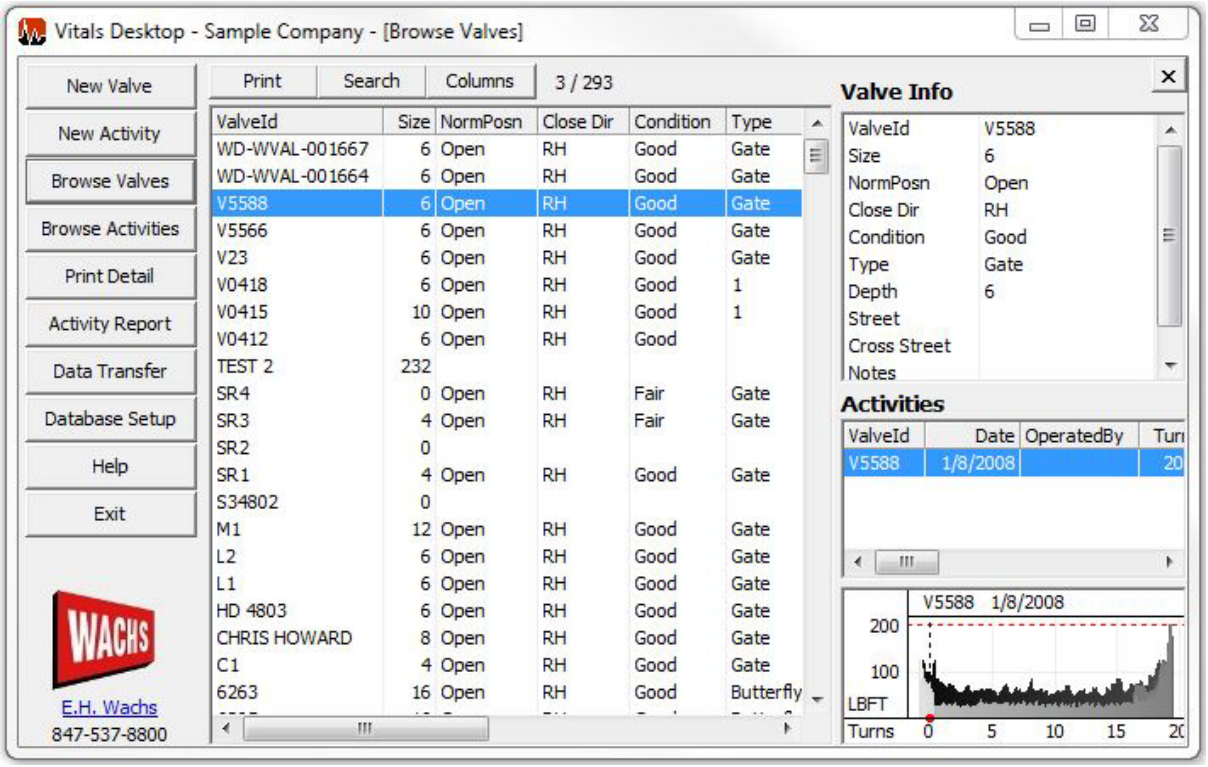


Figure 6-7. Browse Valves

- To display the torque chart for an activity, click on the activity in the Activities section of the screen. The torque chart appears below.
- To view a larger version of a torque chart animation in its own window, double-click the torque chart graphic in the Torque Chart display section. To animate the torque chart, right-click the graphic and select **Animate**.

2. To search for valves/activities matching specific criteria, click the **Search** button in the All Valves/Activities section.

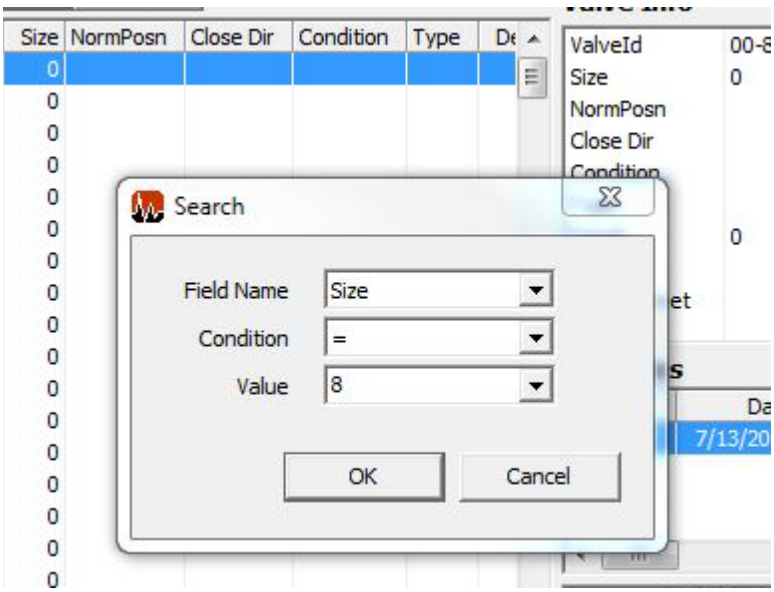


Figure 6-8. Valve Record Search

3. To select which fields appear on the valve/activity record screen, click the **Columns** button to bring up the Select Report Fields screen.

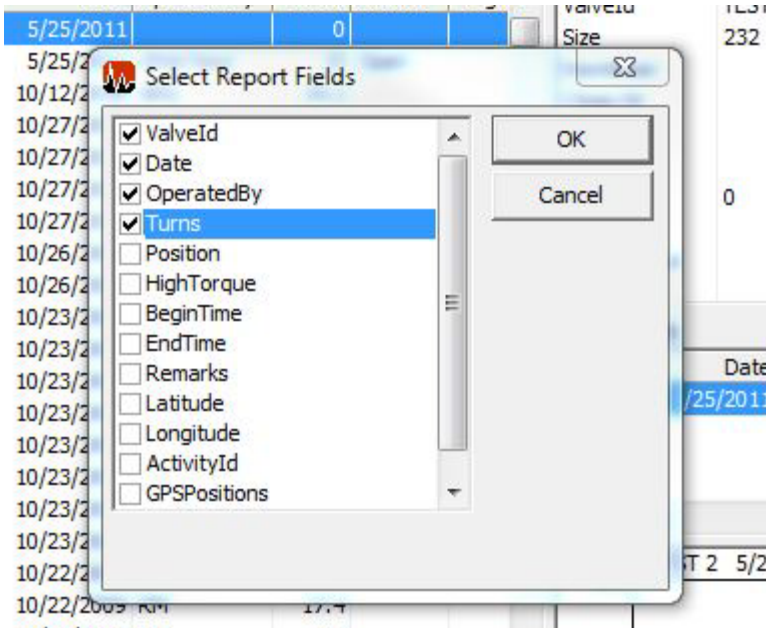


Figure 6-9. Select Report Fields

PRINTING

Print Detail

1. When you click **Print Detail**, the **Print Detail** dialog appears.

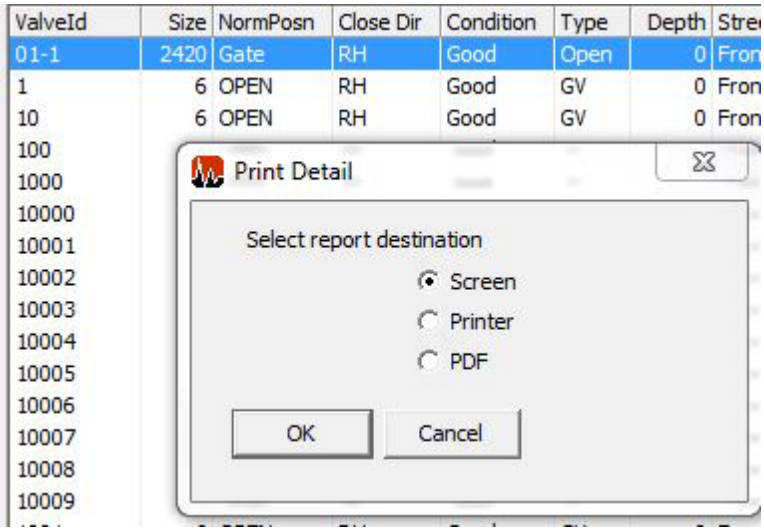


Figure 6-10. Print Detail

- Click a radio button titled **Screen**, **Printer**, or **PDF** to choose a location to print.
- Click **OK** to confirm printing.

VITALS™ **Sample Company - Valve Detail Report** **10/30/2012**

Page 1 of 1

Valve#V5588 Detail

Size	6
NormPosn	Open
Condition	Good
Type	Gate
Depth	6
StreetName	
Notes	
Grid	

Activity #1 of 1 Activities

Date	OperatedBy	Turns	Position	HighTorque	BeginTime
5/2/2012		20.2		200	12:22 AM

EndTime	Remarks	Latitude	Longitude
12:27 AM		44.604069	87.442492

Figure 6-11. Sample Print Detail

Activity Report

1. When you click **Activity Report**, the **Activity Report** dialog appears.

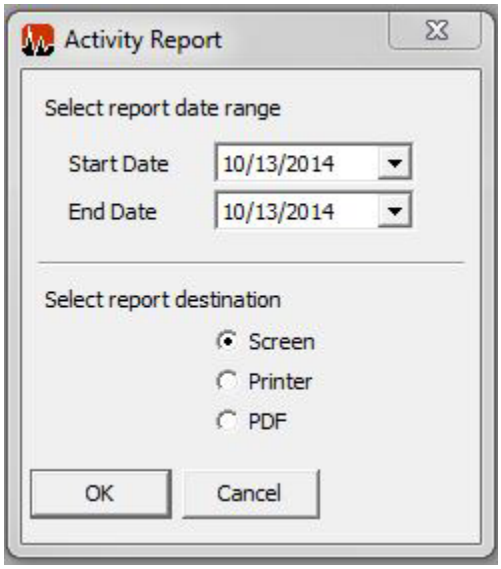


Figure 6-12. Activity Report

- Click the dropdown boxes next to Start Date and End Date to choose a date range of valves or activities for which you would like to produce a report.
- Click a radio button titled Screen, Printer, or PDF to choose a location to print.
- Click OK to confirm printing.

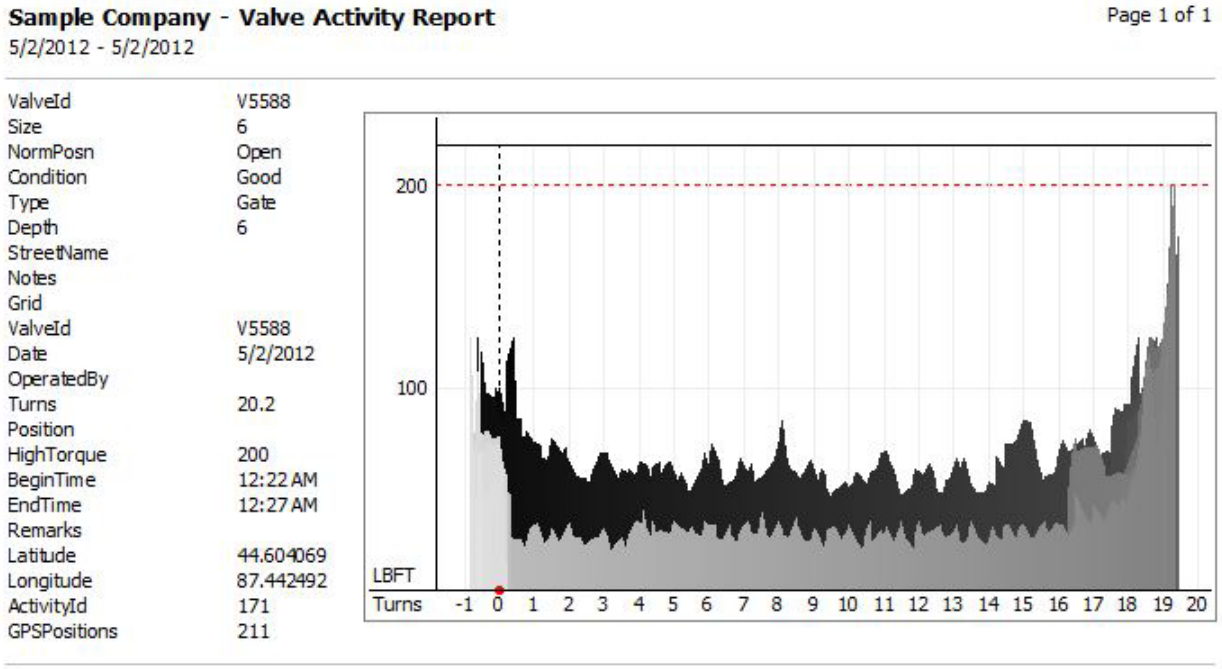


Figure 6-13. Sample Activity Report

TRANSFERRING DATA BETWEEN VITALS DESKTOP AND VITALS MOBILE

Data Transfer

The following figure displays the Data Transfer screen.

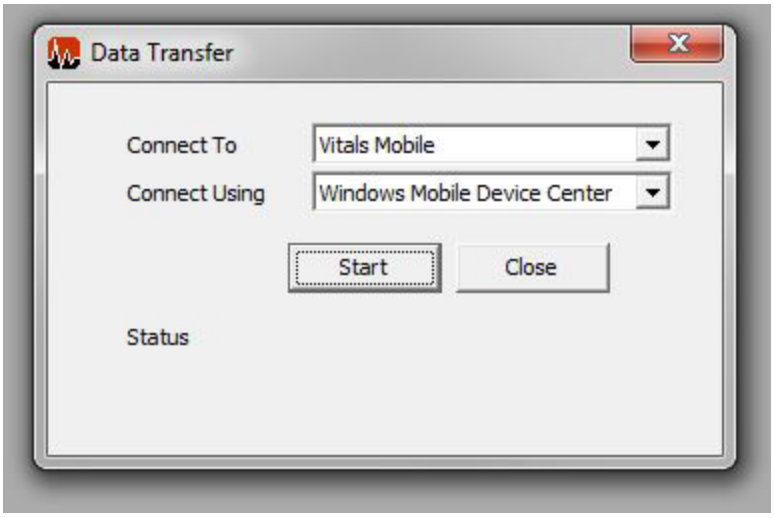


Figure 6-14. Data Transfer Start Screen

- If connecting to a device running Vitals Mobile, connect the controller USB cable to the controller and to a USB port on your PC. In the Connect To dropdown box, select **Vitals Mobile**. The Connect Using dropdown box will automatically select ActiveSync or Windows Mobile Device Center.
- If connecting to a Silver Box controller, connect the Silver Box cable connection to the Silver Box controller and the RS232 connection to an RS232 port on your PC. In the Connect To dropdown box, select **Controller/Data Logger**. In the Connect Using dropdown box, select the COM port associated with your controller.
- If connecting to a Yellow Box controller, connect the Yellow Box cable connection to the Yellow Box controller and the RS232 connection to an RS232 port on your PC. In the Connect To dropdown box, select **TMC-DT1** Controller. In the Connect Using dropdown box, select the COM port associated with your controller.

1. Click **Start** to begin a Data Transfer session, or **Close** to cancel. If you have exercised valves and are downloading valve data, these records will be automatically downloaded after you click **Start**. Once downloaded, these activities are deleted from Vitals Mobile.

2. In the Export Valve Records screen, you can specify which valve records you would like to upload to Vitals Mobile. The bottom left corner of the screen indicates the number of valves in the database, or the number of valves specified. If your database contains more than 15,000 valves (or 5,000 valves for the Recon control-

NOTE

Vitals Desktop will automatically try to push out the latest version of Vitals Mobile to the HC-100. It is recommended to keep Vitals Desktop and Vitals Mobile at the same version number.

ler), a message box will appear warning you that performance may be affected. You may still proceed to upload your full database if you wish. Click **OK** to perform the data transfer. (See “Uploading Large Databases” on page 73 for more detail.)

Figure 6-15. Select Valves to Export

3. After performing the data transfer, you will be returned to the initial Data Transfer screen, indicating the status of the transfer, as well as the amount of valve activities received from Vitals Mobile during the transfer. Click **Close** to exit this screen.

Figure 6-16. Data Transfer Complete

Uploading Large Databases

HC-100 responsiveness diminishes as the valve database size grows. Uploading data sets with more than 15,000 valves creates a slight lag. On older RECON controllers, the data set size is 5,000 valves.

If your database is over 5,000 valve records, a message will appear recommending you to select a range to upload. (You may still upload your entire database if you wish)

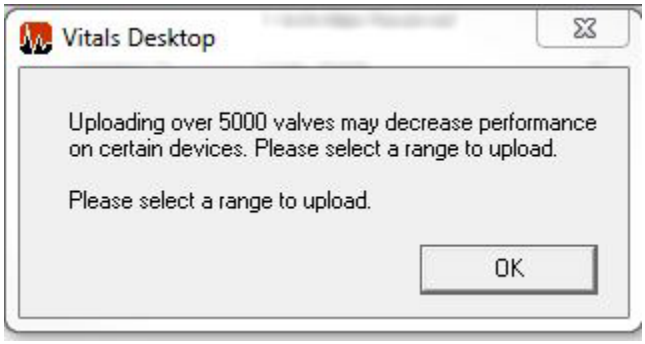

Vitals Desktop
Uploading over 5000 valves may decrease performance on certain devices. Please select a range to upload.
Please select a range to upload.
OK

Figure 6-17. Over 5,000 Valve Record Popup Message

To split your database into smaller sections for upload, perform the following steps.

1. Create a new field in your Valves table to identify distinct sections of your valve record structure, such as Grid. In this example, different Grid choices could be A, B, C, etc. Refer to “Customize Data Fields” in the “Database Options” section for more information on creating custom data fields.
2. Add the appropriate Grid choice for each valve record by editing the valve record information. Refer to “Valve Record” in the “Creating and Editing Valves and Activities” section for more information on editing valve records.
3. Start a Data Transfer and select **OK** when the range selection message appears. The Export Valve Records screen appears.

Figure 6-18. Select Valves to Export - Over 5,000 Valve Records

4. Click the radio button **Specify valve records**. Select **Grid** in the **Field** dropdown and choose the grid(s) containing the valves you wish to upload. Notice that the number of valve records being transferred has been reduced to only those that meet the specified requirements.

Figure 6-19. Specify Valve Records - Custom Field Specification

5. Complete the remainder of the Data Transfer.

DATABASE OPTIONS

Database Setup

This section describes the actions you can perform with the currently open database.

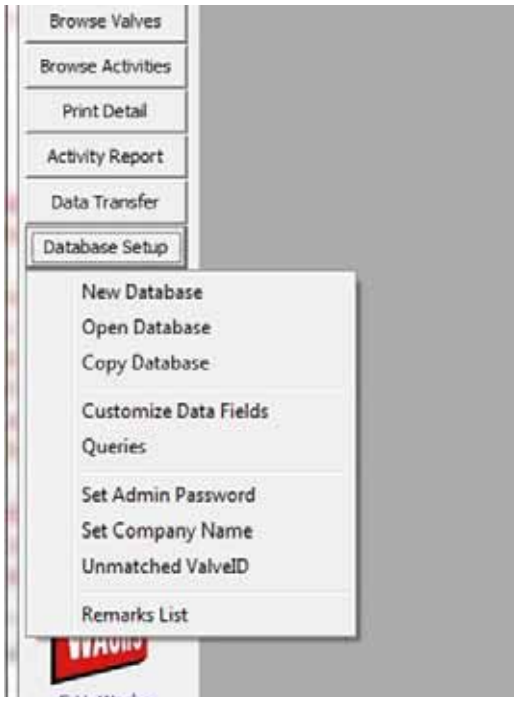


Figure 6-20. Database Setup Options

- **New Database** allows you to create a new blank database.
- **Open Database** allows you to open an existing database.
- **Copy Database** allows you to create a copy of an existing database.
- **Customize Data Fields** displays the Customize Data Fields screen, which allows you to create custom fields to your database for valves and activities. See section “Customize Data Fields” for more information.
- **Queries** displays the Query List screen, which allows you to create and run SQL queries against the currently open database. See section “Queries” for more information.

- **Set Admin Password** allows you to create a password to limit access to the Database Setup options.
- **Set Company Name** allows you to create or edit a company name associated with the currently open database.
- **Unmatched ValveId** allows you to find activities from the Activities table that do not have an associated valve with the same ValveId in the Valves table. This option will allow you to create valves with ValveIds in the Valves table to ensure that all activities in the Activities table are associated with a valve in the Valves table.
- **Remarks List** displays the remarks you have defined and allows you to create new remarks. See section “Remarks List Window” for more information.

Customize Data Fields

This section describes the Customize Data Fields screen and how to create custom data fields.

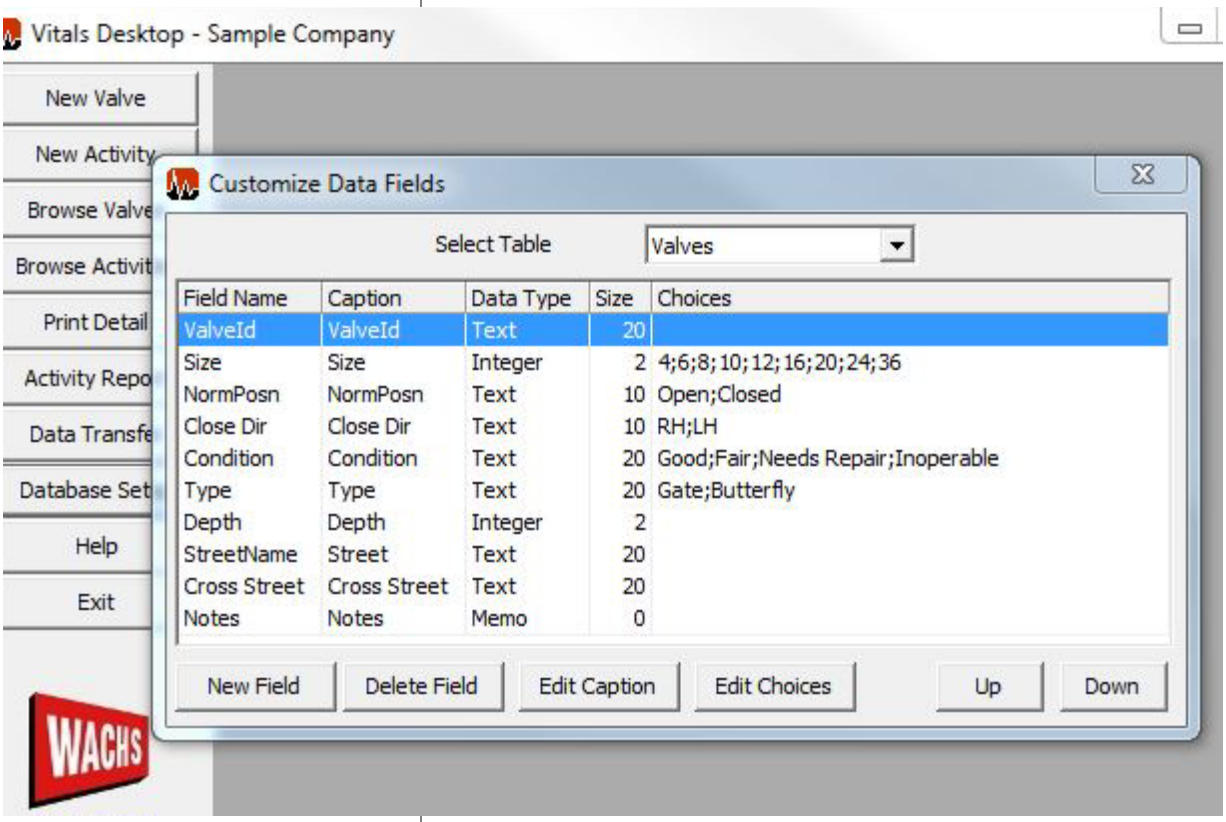


Figure 6-21. Customize Data Fields

- In the **Select Table** dropdown box, you can select whether you would like to add a data field to the Valves or Activities table.
- **Field Name** displays the name given to each data field, which is seen by the database.
- **Caption** displays the familiar name of each data field, which is seen by the user in Vitals Desktop and Vitals Mobile.
- **Data Type** displays the type of data that can be entered into each field.
- **Size** displays the maximum length each choice of a field.
- **Choices** displays the default options available for each field.
- Click **Delete Field** to delete a preexisting field.You will not be able to the delete a field if there is information associated with a valve pertaining to that field.
- Click the **New Field** button to create a new custom data field. This will bring up the New Field screen. Here, you will be able to specify a Field Name and Data Type.
- Click the **Edit Caption** button to edit the caption associated with the highlighted data field.
- Click the **Edit Choices** button to edit the choices associated with the highlighted data field.
- Click the **Up** or **Down** arrows to choose the order in which the data fields are displayed when analyzing valve information.

Queries

This section describes the Queries screen and how to create, edit, run, and delete queries. All queries are written in SQL (Structured Query Language).

The Query List screen shows a list of created queries.

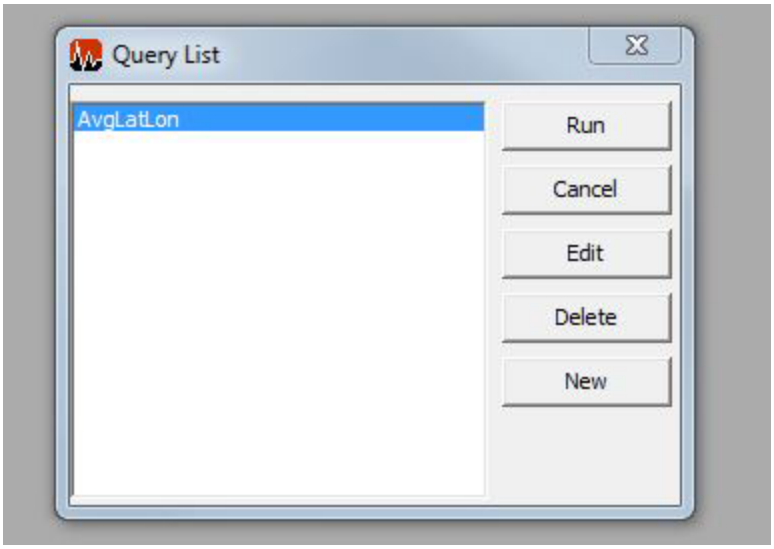


Figure 6-22. Query List

- Click the **Run** button to perform the highlighted query statement. This will return the valve or activity information specified in the query.
- Click the **Edit** button to edit the highlighted query.
- Click the **Delete** button to delete the highlighted query.
- Click the **New** button to create a new query using SQL.

HELP OPTIONS

This section describes the options available through the help dropdown menu in Vitals Desktop 3.3.

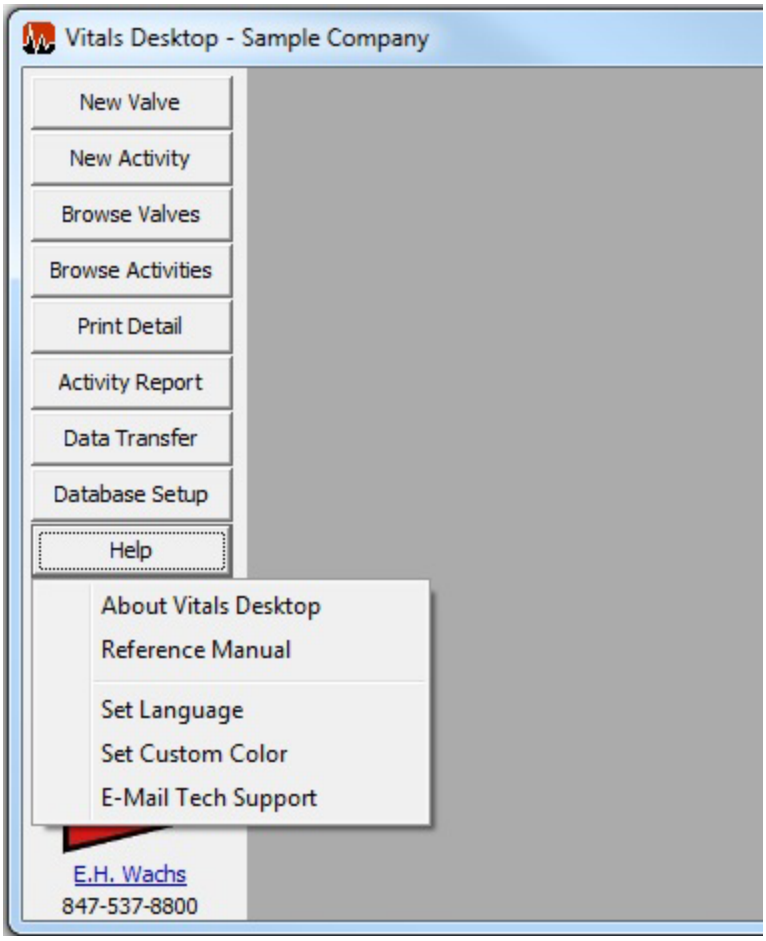


Figure 6-23. Help Options

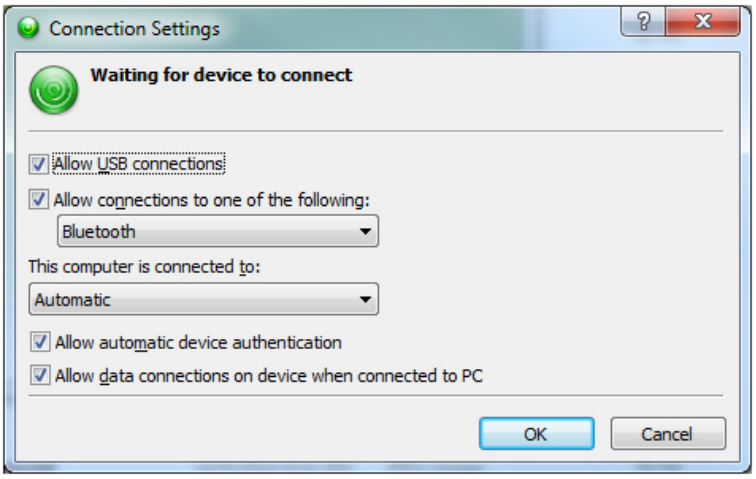
- **About Vitals Desktop** displays an about screen with the software version number and the location where the currently open database is stored.
- **Reference Manual** opens a PDF of this reference manual for helpful information regarding the HC-100 controller, Vitals Desktop 3.3, and Vitals Mobile 3.3.
- **Set Language** displays the Language screen, which allows the user to choose a new default language. The currently selected language will be automatically transferred to Vitals Mobile during the next data transfer.
- **Set Custom Color** displays a color dialog, allowing the user to choose a custom color in which to display the currently open database.
- **E-Mail Tech Support** opens a blank email message that the user can fill out with questions or concerns. Tech Support emails are sent to the technical/engineering staff at E.H. Wachs in Harvard, IL.

Chapter 7
Troubleshooting Guide

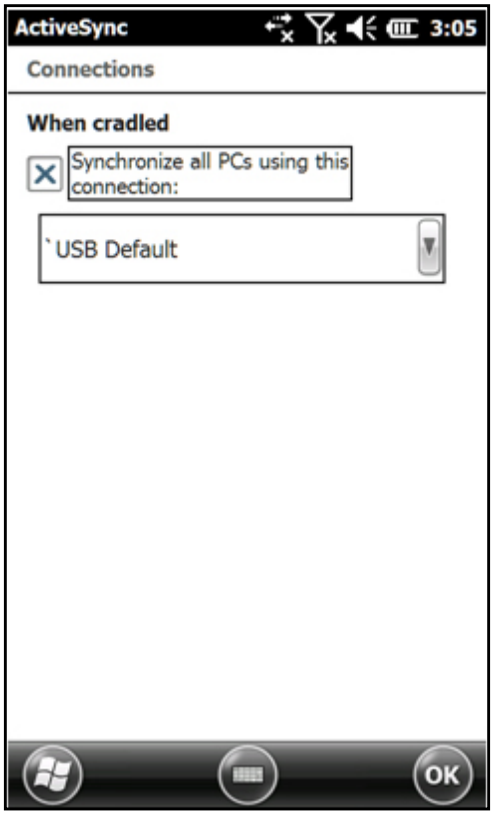
Symptom: HC-100 not recognized when connected to PC

Many issues can affect HC-100 connectivity to the PC.

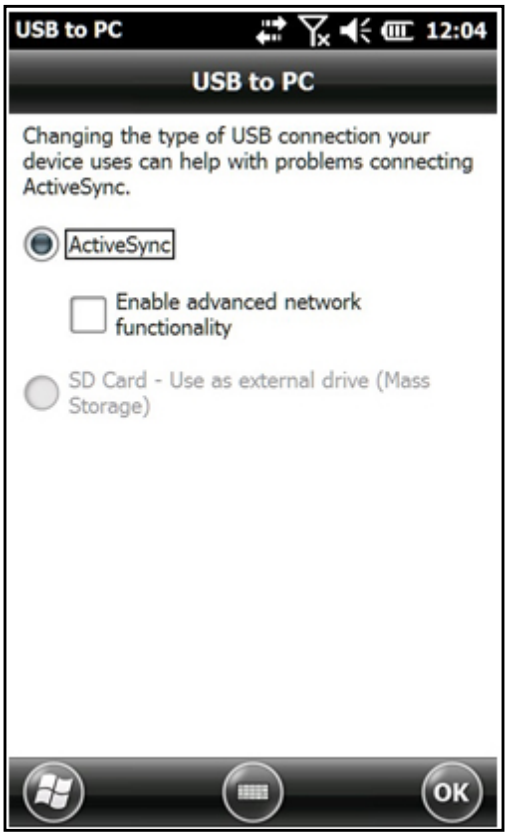
1. Problem with Windows Mobile Device Center
   - Check to make sure Windows Mobile Device Center is installed
   - Firewall settings may prevent drivers from loading
   - Check Mobile Device Settings:



2. ActiveSync settings on HC-100
   - Start Screen > Tap ActiveSync icon > Menu > Connections...



3. USB to PC setting on HC-100
   - HC-100 Home Screen > Tap Settings icon > Tap Connections icon > Tap USB to PC icon:


USB to PC
12:04
USB to PC
Changing the type of USB connection your device uses can help with problems connecting ActiveSync.
ActiveSync
Enable advanced network functionality
SD Card - Use as external drive (Mass Storage)
OK

Enable advanced network functionality is off by default.

4. Faulty USB cable.
   - Check connection with another USB cable.

Symptom: Running slow or locking up

Occasionally, software programs or the operating system on a device may cease to respond, leaving the device in a state where it cannot be used until some or all software programs are closed or the operating system is reset.

Stop Running Programs

1. Open Task Manager on the HC-100 to stop applications or end tasks. (Task Manager is on the HC-100 Home screen - Tap on Home button)

2. Tap on Menu > End All Tasks

Soft Reset

1. Try soft resetting the device by pressing and holding the Power (On/Off) key for 5-10 seconds until the Power Button menu appears. Tap Reset.

Restoring to Factory State (Clean Boot)

CAUTION: Restoring the HC-100 to its original factory state permanently erases data saved on the handheld, any software you installed, and any changes you made to the handheld, including changes to settings.

1. Back up files and programs you want to keep onto another computer.
2. Save open files and close running programs on the handheld. Press and hold the power button until the Power Button menu appears. Tap
3. *Reset*.
4. When the screen turns black, press and hold the power button again. The BIOS screen is shown.
5. Move the top slider on the screen to the right to set or clear factory defaults. This clean boots the handheld.
6. Tap *Exit*. The boot process continues.

Symptom: Touchscreen not accurate or responding to touch input

Touchscreen performance can be optimized for individual situation or whether using a finger vs. stylus input.

Adjust Touchscreen Settings

1. Settings>System>Touch
2. Select Touch Profile (Stylus 10 is the recommended default profile).
3. Finger and Stylus profiles available.

Use HC-100 stylus.

1. Wider tip stylus will actually work better the a fine tip stylus because the wider tip will activate more contact points at a time.

Use Hold To Zoom Feature

1. Press and hold down P1 button
2. Tap on the screen. Area around the tap location will zoom in allowing finer user touch input.
3. Release P1 button to zoom out

Soft Reset

1. Try soft resetting the device by pressing and holding the Power (On/Off) key for 5-10 seconds until the Power Button menu appears. Tap Reset.

Symptom: HC-100 turning off and rebooting

Low battery

1. Charge battery
2. Keep HC-100 plugged-in (vehicle DC charger or AC charger) when not in use

Symptom: Vitals Mobile Controller Stops responding

Faulty machine connection

1. Soft reset HC-100
2. Check connection with Vitals Diagnostics
   - Vitals Diagnostics will not connect to machine with faulty connection. Vitals Mobile accepts an intermittent connection problem.
     i. Diagnose source of faulty connection: control cable, wiring, connector corrosion, faulty equipment ground, faulty control board.

Symptom: Runtime errors while using or installing Vitals Desktop.

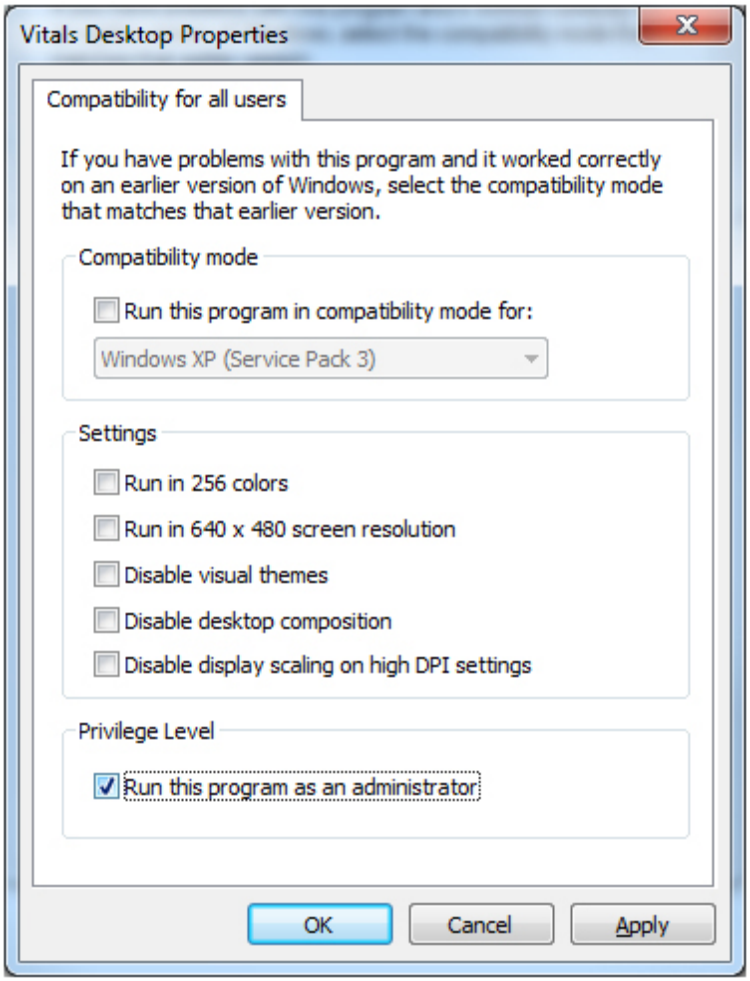
1. User account related
   - Lacking user account privileges
   - Log in to computer as Administrator
2. Vitals desktop related
   - Did not install correctly. Reinstall Vitals Desktop

Symptom: Runtime error shows up after doing a data transfer: Runtime error 53: File not found: rapi.dll.

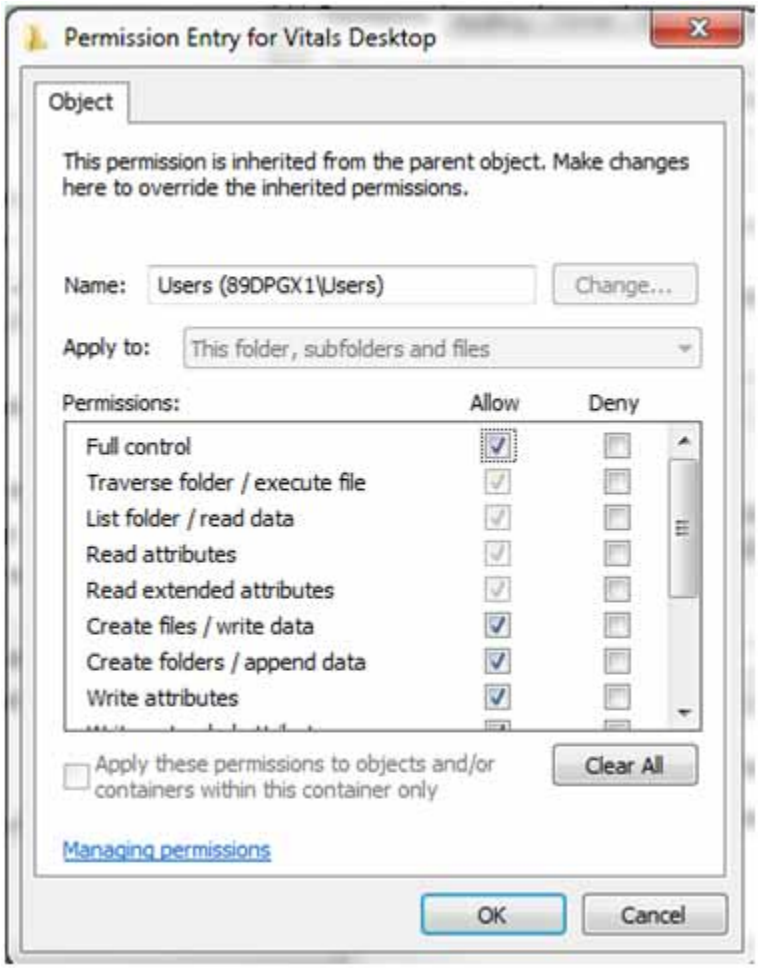
1. Windows Mobile Device Center
   - WMDC is not installed or is corrupted on PC. Install WMDC 6.1 by downloading it from the Microsoft Website.

Symptom: Runtime error shows up after trying to launch Vitals Desktop: Runtime error 75: Path\File access error

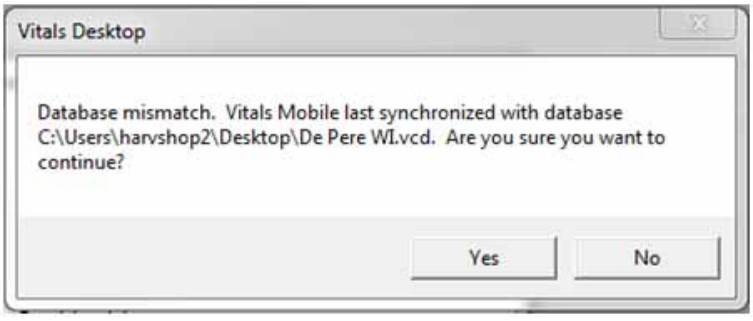
1. User account related
   - Lacking user account privileges
   - Log in to computer as Administrator
   - Run Vitals Desktop as Administrator


Vitals Desktop Properties
Compatibility for all users
If you have problems with this program and it worked correctly on an earlier version of Windows, select the compatibility mode that matches that earlier version.
Compatibility mode
Run this program in compatibility mode for:
Windows XP (Service Pack 3)
Settings
Run in 256 colors
Run in 640 x 480 screen resolution
Disable visual themes
Disable desktop composition
Disable display scaling on high DPI settings
Privilege Level
Run this program as an administrator
OK
Cancel
Apply

- Allow Full Control to user running Vitals Desktop
  i. Right click in the Vitals Desktop folder (C:\Program Files\Vitals Desktop) and click **Properties.**
  ii. Select the **Security** tab and then click **Advanced.**
  iii. Click **Change Permissions** and then select the users that will be using Vitals Desktop. Click **Edit.**
  iv. Check the **Full control** check box and click **OK.**



Symptom: Database mismatch message after performing a Data Transfer.

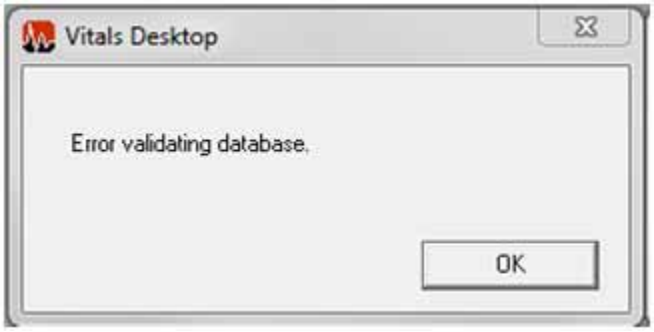

Vitals Desktop
Database mismatch. Vitals Mobile last synchronized with database C:\Users\harvshop2\Desktop\De Pere WI.vcd. Are you sure you want to continue?
Yes
No

1. Directory related
   - This message can appear when the default location of the Database is changed within Vitals Desktop.

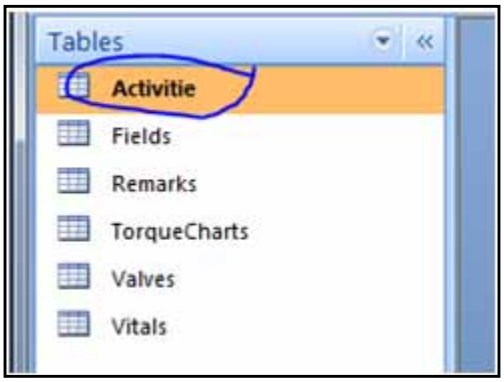
The file location in the message is the location for the very first database you created.

- Clicking yes will simply ignore the message and perform the Data Transfer to the database currently opened within Vitals Desktop.
- To avoid this message, do not change the file location of Vitals Database. Be careful with mapped drives or user level folders. It is recommended to use Windows UNC with an absolute path
- To eliminate this message, reinstall Vitals Mobile.
  i. Uninstall Vitals Mobile on the handheld.
  ii. Remove the Vitals Mobile folder from the File Explorer menu on the handheld.
  iii. Reinstall Vitals Mobile from the PC running Vitals desktop. (If the location of the database is changed again in Vitals Desktop, the message will re-appear.)

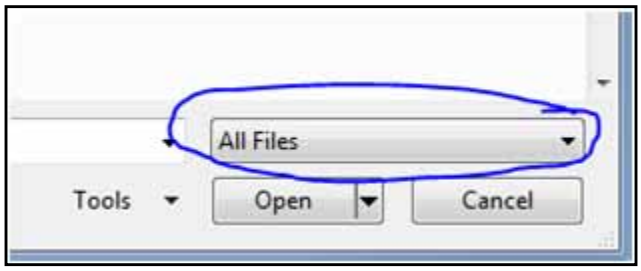
.Symptom: "Error validating database" appears after trying to open a database in Vitals Desktop.



1. Database table was changed with MS Access.

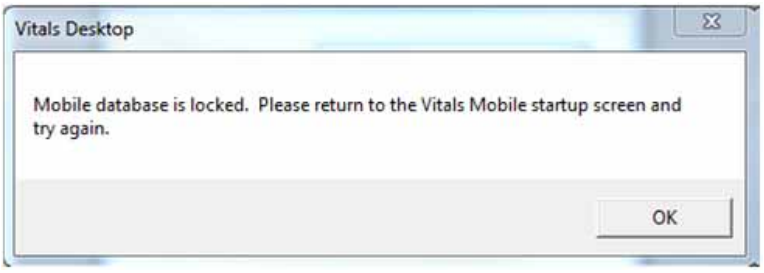


- One of the tables in the database was renamed using MS Access. In this example, the **Activities** table was renamed to **Activitie** (note the missing "s" at the end). These tables should not be renamed.
  i. To fix this, open **Microsoft Office Access**, **Open**, and change the type to **All Files**.

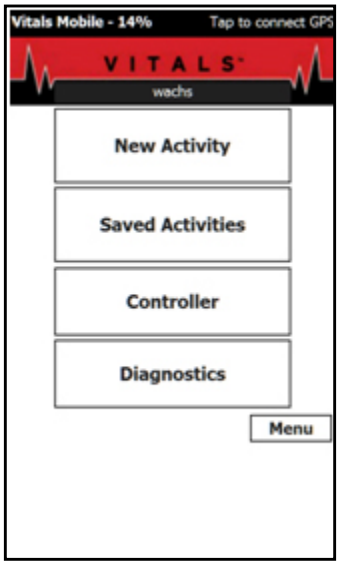


  ii. Select the database with **.vcd** extension and open it
  iii. **Right click** on the table and click **Rename.**
  iv. Rename to **Activities.**
  v. Close Microsoft Office Access and open the database with Vitals Desktop.
- Tables required by Vitals are as follows: **Activities**, **Fields**, **Remarks**, **TorqueCharts**, **Valves** and **Vitals**. If these are missing or named differently, there will be problems when trying to open the database.

Symptom: "Mobile database is locked" message appears when performing a Data Transfer.



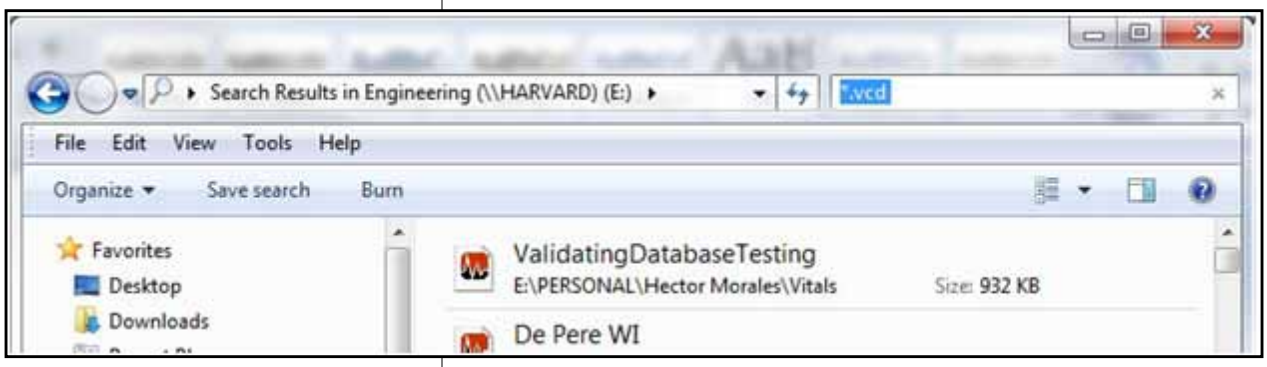
1. User Error
   - This error message pops up when Vitals Mobile is not on the main screen.
     i. Make sure Vitals Mobile is at the following screen, and then click on **Data Transfer** in Vitals Desktop.



Symptom: Can't find database (.vcd file) that was transferred from handheld controller to Vitals Desktop.

1. Directory related
   - Created a new database and saved it at another location and thus changing the default directory.
     i. Perform a computer search by typing "***.vcd**" in the search bar. (This is the extension for the data-

base file when it is transferred to Vitals Desktop.)



ii. Click on Open Database under Database Setup and point to the directory containing vitalsdb.vcd.

1. Database file deleted or overwritten.

Chapter 8
Ordering Information

To place an order, request service, or get more detailed information on any E.H. Wachs Company products, call us at one of the following numbers:

U.S. 800-323-8185

International: 847-537-8800

Or you can visit our website at:

www.turnvalves.com

In This Chapter

ORDERING REPLACEMENT PARTS

REPAIR INFORMATION

WARRANTY INFORMATION

RETURN GOODS ADDRESS

ORDERING REPLACEMENT PARTS

When ordering parts, please provide the part description and part number for all parts you are ordering.

REPAIR INFORMATION

Please call us for an authorization number before returning any equipment for repair or factory service. We will advise you of shipping and handling. When you send the equipment, please include the following information:

- Your name/company name
- Your address
- Your phone number

- A brief description of the problem or the work to be done
- The RMA number printed on the outside of the box or container.

Before we perform any repair, we will estimate the work and inform you of the cost and the time required to complete it.

WARRANTY INFORMATION

Enclosed with the manual is a warranty card. Please fill out the registration card and return to E.H. Wachs Company. Retain the owner's registration record and warranty card for your information.

RETURN GOODS ADDRESS

Return equipment for repair to the following address.

E.H. Wachs—Water Utility Products
455 Comanche Circle
Harvard, Illinois 60033 USA

Appendix A

Vitals Valve Exercising Program

Vitals provides two modes of valve operation.

- The ‘EXERCISE’ mode is designed to close and open (exercise) a valve as part of a maintenance routine, with minimal risk of damage to the valve.
- The ‘EMERGENCY’ mode is used when the valve must be closed quickly; a higher risk of valve damage is acceptable for the sake of speed.

The main difference between the modes is that the rate at which torque is increased is greater in the EMERGENCY mode.

The valve turning program relies on several control modes as the machine works through the valve turning process. The control mode of the machine varies based on the state of the valve turning operation (direction to turn the valve, valve stuck or turning) and the mode of operation.

Function Overview

At the start of the valve turning operation, the machine (and likely the user) has no way to know what state the valve is in when the machine is first connected. The torque required to turn the valve is unknown and the valve could be fully open, fully closed, or anywhere in between.

The machine starts with a torque LIMIT of 100 ft-lbs, but the machine attempts to move the valve back and forth with a lower torque call the SETPOINT. The machine attempts

to turn the valve up to the torque set by the SETPOINT. If it is not successful, the machine changes directions and tries again. The SETPOINT is then increased by a value dependent on the operating mode (EXERCISE or EMERGENCY), then the machine tries again.

The SETPOINT continues to increase, if the valve does not move, until it reaches the LIMIT. At this point the operator must decide to increase the LIMIT or try again at the same LIMIT. The LIMIT cannot be increased until the machine has tried to turn the valve at each of the SETPOINT torques and the required number of tries at the current LIMIT.

At the beginning of the valve turning operation, the direction to turn the valve is unknown. The user may optionally choose a direction for the machine to turn. Otherwise, the machine attempts to turn the valve in either the right hand (RH) or left hand (LH) direction until a specified number of turns (depending on EXERCISE or EMERGENCY mode) is reached.

Once an operating direction is established, it is referred to as the FORWARD direction regardless of whether it is RH or LH. Likewise REVERSE is the opposite of that direction. During the operation, if the valve reaches a point where it cannot be turned at the current torque, the machine attempts to work past the tight spot by reversing and incrementing SETPOINTS.

Jogging

In order to align the machine with the valve, it is often necessary to move the machine a small amount. This is accomplished with the JOG function. The direction of operation is set by the user. This is done by pressing a ‘JOG RIGHT’ or JOG LEFT” button on the controller. The torque limit is set to the current *LIMIT.* Operation continues in that direction until the button is released or the *LIMIT* is reached.

Manual Mode

This mode implements full control by the user. The user has complete control of the machine direction. Torque is limited only by the LIMIT value and LIMIT may be incremented at any time.